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A Survey of the Basic Biological Sciences in Colleges of Pharmacy*

R. A. DENO
College of Pharmacy, Rutgers University

INTRODUCTION

For a long time those who viewed pharmacy as a field grounded in biology, as it is in chemistry, were decidedly in the minority. Within recent years their numbers have increased, and today the role of the biological sciences is recognized by many pharmaceutical educators. Biological science, and biology, as used here, include both botany and zoology. To many, biology connotes only the study of animal life, but it properly includes any science dealing with either plant or animal, or both. The question has become, how much biology is warranted in a four year curriculum, and what form should it assume? The answer should be found in the Pharmaceutical Syllabus, whose outlines in biology, as in other fields, should be as complete as is consistent with the limitations of time, demands of other cognate work, and the primary requirements of the pharmacy courses themselves.

This study was made to help those charged with responsibility for the biology outlines of the Syllabus. Hence it covers the nature of the basic courses—how much is given, how it is presented, the training of the teachers and the feeling of instructors and administrators toward biology.

Courses which should be considered as basic biology include botany, zoology, (or general biology where these two are presented together), vertebrate zoology, plant anatomy, and physiology. Since physiology was adequately covered by Dr. Dille in his study on pharmacology (1), it is included here only where it enters into the discussion.

The data were secured by means of questionnaire, study of catalogues, and through personal visit and correspondence. A questionnaire was sent to the 55 member schools of the American Association of Colleges of Pharmacy. Replies were received from 38. With most of the other schools the col-

*A study project of the Committee on Problems and Plans. Presented at the 1938 Minneapolis meeting.

lege catalogue was the only source of information. For one college no information was received. The report, therefore, includes 54 colleges.

THE BEGINNING COURSE IN BIOLOGY

Schools requiring work in elementary botany, zoology or both are listed in table 1. The table, however, does not in-

TABLE I

REQUIREMENTS IN ELEMENTARY BOTANY AND ZOOLOGY

One year of biology, combining botany and zoology		6
	Connecticut	North Pacific (plus 1 sem. botany)
	Florida	Philadelphia
	Nebraska	Virginia
One year of botany, one semester of zoology		3
	George Washington	Indianapolis
	Rutgers	
One year of botany, one year of zoology		4
	Iowa	Oregon State
	Minnesota	Tennessee
One semester of botany, one year of zoology		1
	Texas	
One semester of botany, one semester of zoology		10
	Creighton	Massachusetts
	Detroit Institute of Technology	North Carolina (one quarter each)
		Puerto Rico
	Loyola	Rhode Island
	Maryland	Xavier
	Wisconsin	
One year of botany		14
	Alabama	Pittsburgh
	Colorado (2 quarters)	Purdue
	Louisville	Temple
	Mississippi	Valparaiso
	Notre Dame	Washington (2 quarters)
	North Dakota State College	Western Reserve
		West Virginia
	Ohio Northern	
One semester of botany		14
	Duquesne	Oklahoma
	Howard	Southern California
	Idaho	South Carolina
	Illinois	South Dakota State
	Kansas	St. Louis
	Michigan	Washington State
	Montana	Wayne

dicate, in every case, the strength of the course. In a few cases more time is devoted to botany or zoology in a one semester course than in a year's course in some other school. Of 48 colleges, 24 require both botany and zoology, while 28 require botany only.

Table 2 shows those schools in which elective work in elementary botany and zoology is given. The number offer-

TABLE II

ELECTIVES IN ELEMENTARY BOTANY AND ZOOLOGY

Two quarters of botany, two quarters of zoology		2
	Georgia	
	Ohio State (one or the other required)	
One year of botany		1
	Philadelphia	
One semester of botany		1
	Florida	
One year of zoology		12
	Alabama Polytechnic	North Dakota State College
	Colorado	Notre Dame
	Florida	Ohio Northern
	Idaho	Oklahoma
	Illinois	Purdue
	Mississippi	West Virginia
One semester of zoology		4
	Duquesne	Michigan
	Kansas	Wayne

ing general zoology as an elective is large, but it still leaves 15 out of 54 with zoology neither required nor elective. There are no figures available on the number of pharmacy students who choose zoology as an elective, but from the data it is probable that about one-half of those enrolled in colleges of pharmacy receive training in elementary zoology.

It is difficult to determine with accuracy exactly how the beginning work is organized, and how substantial it is. Six schools only combine botany and zoology as general biology, but on the questionnaire twelve out of thirty-six, exactly one-third, expressed a preference for this method of introducing pharmacy students to life science. Twenty-four indicated that separate courses in botany and zoology were more desirable.

Of thirty-one answers to inquiry on the merits of the older type-form approach with emphasis on morphology, or the principles method which includes more phases of the subject, six expressed approval of the type-form method, seventeen favored the principles plan, and eight indicated that a combination of the two was most satisfactory. A study of the texts used, however, indicates that emphasis on morphology prevails for both botany and zoology, as they are now given. Table 3 lists the texts used in botany, zoology and biology courses. The three texts most popular

TABLE III

TEXTS USED IN ELEMENTARY COURSES IN BIOLOGY, SHOWING THE NUMBER OF SCHOOLS USING EACH.

***Botany*:**	
Youngken	10
Holman and Robbins	8
Robbins and Rickett	3
Sinnott	2
Bastins	2
Allen	1
Kraemer	1
Smith Overton	1
Swingle	1
***Biology*:**	
Kenoyer and Goddard	2
Menge	2
Barrows	1
Woodruff	1
***Zoology*:**	
Hegner	9
Curtis and Guthrie	3
Wolcott	2
Chidester	1
Fasten	1
Guyer	1
Lane	1
Newman	1

in botany stress morphology particularly, as does the one most widely used in zoology. Nearly all of these texts are standard works in the field which they cover.

The length of time devoted to beginning courses varies from one semester in botany only, with two hours lecture and two or four hours laboratory each week, to a year of botany

and a year of zoology, with six hours each week throughout the two years. In the majority of schools the number of hours devoted to laboratory was slightly more than those spent in lectures or recitations.

In both botany and zoology the training and rank of the instructors were high. Seventy-two per cent hold a doctor's degree, and seventy-one per cent have professional rank. The reasons for this are that botany is usually presented by the professor of pharmacognosy, and that zoology is frequently given by a professor in the university with which the college of pharmacy is associated. Many of the schools which are not a part of a university do not offer work in zoology.

The additional subjects which those who instruct in biology are called upon to teach are usually closely related ones. This is particularly true in zoology, where usually only advanced courses in this field are given by those who present the beginning course. In botany there is a wider variation, but here, also, the majority of the additional courses are in the field of plant science.

ADVANCED COURSES IN BIOLOGY

Relatively few schools require zoological courses beyond the elementary one, with the exception of physiology. Dr. Dille found only three schools in which no physiology was offered. Table 4 shows those requiring work in plant histology

TABLE IV

REQUIREMENTS in ADVANCED BOTANY AND ZOOLOGY

Plant Histology		11
	Duquesne	Minnesota
	Florida	Rutgers
	Illinois	St. Louis
	Kansas	Temple
	Massachusetts	Tennessee
	Wisconsin	
Vertebrate Anatomy		2
	Georgia	Virginia

and vertebrate anatomy. There are additional ones which include instruction in these subjects in other courses. Plant

histology is frequently included in pharmacognosy, and vertebrate anatomy in physiology. In fact, many courses listed as physiology include as much anatomy as they do physiology. The two disciplines can be studied together to advantage, but where this is done sufficient time should be allowed for lecture and laboratory to adequately cover both fields. A three hour lecture course for one semester cannot do this.

The sentiment on the advisability of including instruction in vertebrate anatomy varies. On the questionnaire, twenty-one were definitely opposed, two were undecided, and fifteen favored such instruction. Where separate answers were received from the dean and the pharmacologist, the latter almost invariably expressed preference for anatomy, whether the administrator felt it advisable or not.

Schools in which biological electives are available are shown in table 5. Practically all of these are colleges of a

TABLE V

ELECTIVES in ADVANCED BOTANY AND ZOOLOGY

Advanced courses in both fields open to pharmacy students.....19

Alabama Polytechnic	North Carolina
Colorado	North Dakota State
Duquesne	Ohio Northern
George Washington	Oklahoma
Georgia	Oregon State
Maryland	Philadelphia
Mississippi	South Dakota State
Michigan	Washington State
Nebraska	Wayne

West Virginia

Advanced courses in botany only open to pharmacy students..... 5

Idaho	Notre Dame
Loyola	Western Reserve

Wisconsin

university. Some other institutions, however, with similar connections do not offer such electives to pharmacy students.

SUMMARY OF DATA

1—Pharmacy students almost invariably receive instruction in elementary botany, either pharmaceutical or general.

2—The majority of pharmacy students receive instruction in plant histology, either as a part of pharmacognosy or in a separate course, as is the case in one-fourth of the colleges studied.

3—About one-half study general zoology for at least a semester, either as a separate course, or in combination with botany as general biology.

4—Almost none has a separate course in anatomy before studying physiology and pharmacology. Anatomy is included of necessity in physiology in many schools.

5—Instruction in the elementary courses appears to be well given. In botany the instructors are either well trained in pharmacognosy, or members of the botany department of a university. Where zoology is offered the facilities of a university department are utilized, or the instructor is well trained in this field.

6—For the beginning courses in 38 schools, the average ratio of hours spent in lecture and recitation to those spent in laboratory is as 1 is to 1.6.

DISCUSSION

1—Training in elementary botany appears to be adequate, with the exception of laboratory work to be noted shortly. Opinion is divided on the necessity of emphasizing pharmaceutical applications from the first. Many believe that beginning botany should be pharmaceutical botany, i.e. elementary pharmacognosy. This means that such phases as physiology, ecology, and evolution receive slight attention.

2—Likewise in plant histology is the training adequate, for where a separate course is not given, the work is an integral part of pharmacognosy.

3—Opinion is divided on the need for zoology in pharmacy. About one-half are definitely in favor of requiring this subject. The balance feel that it should be elective, or that it is desirable, but cannot be crowded into the curriculum. In only one case was the statement made that no animal biology of any type was advisable.

4—Table 6 shows the expression from thirty schools on how much animal biology is advisable, and what the courses

should be. The numbers indicate how many favored each of the combinations shown.

TABLE VI

RECOMMENDATIONS FOR ADVANCED COURSES in ZOOLOGY FROM THIRTY SCHOOLS

	1	2	3	4	5	6	7	8
No animal biology	–							
Zoology only	———							
Physiology only	———							
Zoology and anatomy	———							
Anatomy and physiology	——							
Zoology and physiology	———							
Zoology, anatomy and physiology	———							

The figure does not include those who recognized the usefulness of zoology, but felt that time did not warrant its inclusion. Comments from these schools show that the element of time figures largely in the exclusion of animal biology. Some typical statements follow:

"Two years of fundamental biology is a waste of time for the undergraduate in pharmacy."

"No courses in animal biology are necessary for students expecting to follow retail pharmacy. I am of the opinion that only botany and bacteriology are sufficient."

"I am very much in favor of zoology, provided there is room in the curriculum."

"The whole question is, however, where do we stop? I think that vertebrate anatomy, embryology, and human anatomy would be excellent too but I do not believe they would be worth the expense to the usual student in time and money."

"Would be desirable, if time permits inclusion in the curriculum. Curricula must be properly balanced."

"Yes, but time limitation makes the ideal, in this as in other fields, difficult. Compromises by reducing botany and increasing zoology."

"While zoology is not included as a prescribed course, it is mentioned as a desirable elective . . . In any event we must remember that the object of an undergraduate course in pharmacy is the training of pharmacists; not pharmacologists; not pharmacognocists; not bacteriologists and not biochemists. Fundamental information in all of these branches is essential to the pharmacist's knowledge but detailed and highly technical work in one branch should not be given in detriment to any other pharmaceutical science."

Comments from those who favor the inclusion of anatomy as well as pysiology are frequently emphatic. Some are as follows:

"At this institution I feel that a course in comparative anatomy is imperative."

"Our problem is to get in a course in vertebrate anatomy."
"Stress zoology, physiology and human anatomy."
"Vertebrate anatomy and histology are needed to replace elective courses of minor importance."

The teachers of physiology and pharmacology are especially emphatic in stressing the need for anatomy. Even those who teach bio-chemistry and bacteriology feel the need for elementary knowledge of anatomy by pharmacy students. The following comment is typical:

"Students have such a poor background that the pharmacology I teach must be so elementary that I am almost ashamed of it."

5—There is little to discuss on the quality of instruction in basic biological courses, since it appears to be reasonably adequate.

6—The ratio of lecture to laboratory work, 1 to 1.6, is not a healthy one. For elementary botany, elementary zoology and advanced courses in these fields, at least twice as many hours should be devoted to laboratory as to lecture, and in some courses a ratio of 1 to 3 is highly desirable. In biology, first hand information does not come from books and lectures; it must be obtained from plants and animals, in the field and laboratory.

The entire study resolves itself into the following: The majority of pharmaceutical educators recognize the value of biology in pharmacy, but are confronted with these questions:

1—What is the relative importance of botanical subjects and zoological, and how much time should be given to each?

2—What form should instruction in biological science assume?

3—How can these subjects be fiitted into the curriculum without crowding the pharmacy subjects themselves, and without preempting too many hours alloted to other cognate work?

In the light of this study, the following might be suggested as possible answers:

1—Today the pharmacist is as much in need of zoological information as he is of botanical. It appears that an approximately equal distribution between the two would be equitable. Four semesters of plant biology and four of animal would give substantial training in both fields.

2—The form assumed by these courses need not be uniform or invariable. For those colleges depending for biology upon well organized departments of a university, the courses in animal biology might be; zoology, vertebrate anatomy, physiology and pharmacology. In plant biology they could well include; botany, plant histology or macro and microscopic pharmacognosy and bacteriology. In each case a semester of substantial work should suffice.

Where a separate biological department is maintained by the pharmacy school, the courses might be given as follows, a year of general biology as an introductory course in both fields, a year of vertebrate anatomy and physiology, and a semester of pharmacology to complete the animal biology. In plant science the advanced courses could follow as previously outlined—plant histology or microscopic pharmacognosy, pharmacognosy and bacteriology, one semester of each.

In all of these courses the axiom of Thomas H. Huxley that "sound and thorough knowledge was only to be obtained by practical work in the laboratory," should be remembered.

3—Finally, how are these courses to be crowded in—the question which one hears most often from those interested in pharmaceutical education. In some instances, unquestionably by decreasing the amount of botanical instruction. Yet in most cases the amount of botany already given is no more than is indicated here as desirable. In such schools a decision must be made on whether the biology is more important than certain other cognate courses or not. If it is felt that more benefit will come from other work than from biology, and there is room for no added courses, then nothing can be done.

But most important, I believe, is the need for correlation of all of the science subjects in the curriculum to avoid needless repetition. If this is done carefully there will be room for eight semesters of biology, and to spare. Why should serums and vaccines be studied in organic pharmacy, materia medica, prescription practice and pharmacognosy, when a separate course in bacteriology is offered? When the function of the endocrines is covered in physiology, their therapeutics in pharmacology and their structure in biochemistry, why is all this repeated in other courses? The eradication of insect and mammalian pests should be included

in zoology, yet this is given in pharmacognosy, bacteriology, pharmacy and even in other courses.

These are only a few examples of where the same subject matter is hashed over and re-hashed, until it is small wonder that the student becomes fed up with the same old thing. The Pharmaceutical Syllabus should do much to eliminate this duplication. But even if the current revision becomes a model in this respect, with the individual colleges remains the final responsibility of deciding whether or not their students shall receive basic training in biology sufficient for an adequate understanding of the advanced courses. If the basic biology is not given, the advanced courses must remain what they now are—sub-standard courses whose content is shaded to make allowance for the weakness of the pharmacy student. The real weakness is not in the student but in the curriculum he must follow.

(1) Dille, James M. A Study of the Teaching of Pharmacology in Colleges of Parmacy. Am. J. Pharm. Ed. 2, 8, 1938.

Research and Pharmaceutical Progress[1]

GLENN L. JENKINS
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The renaissance period of history was marked by the revival of learning, great advances in literature and in art, by the discovery of the process of printing, and by religious and political revolt. During this period, even the sciences gave evidence of an awakening. Astronomy led the way with the epoch making discovery of Copernicus in 1530 that the sun and not the earth is the center of the solar system. Pharmacy and chemistry were less fortunate since they could free themselves only with difficulty from the mysteries and superstitions of alchemy with its vain quest for the philosopher's stone, the elixir of life, and the riches and bodily vigor their discovery would insure.

The spirit of the times, especially in pharmacy and medicine, was ripe for reform. The ancient school of Galen then retained its authority and dominated the medical sciences.

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[1]Read before the National Conference of Pharmaceutical Research at the Minneapolis meeting August 1938.

Under suitable astronomical conditions crude drugs were collected, prepared and administered, almost exclusively for internal use. Chemical compounds were used to some extent externally. The volatile oils from a few roots and herbs had been isolated through the practice of distillation. Beyond this there had been little advance. When Paracelsus, after Valentine had paved the way, declared "Chemistry is not designed to make gold but medicines", the foundations for a renaissance in pharmacy and medicine were laid. Despite the fact that the disciples of Paracelsus failed to separate the wheat from the chaff of his doctrines, the pharmacopoeia began to improve under their influence, particularly by the introduction of inorganic chemicals and the so-called elegant preparations, tinctures and fluidextracts. What there was of science in medicine was summed up by Paracelsus in the aphorism which was accepted as an axiom by his disciples "Man is a chemical compound; his ailments are due to some alteration in his composition and can only be cured by the influence of other compounds." Thus was founded the iatrochemical school that eventually overthrew the older galenical school of thought.

Progress was made slowly by the iatrochemists. Their work established firmly the use of such chemicals as mercury, lead, iron, antimony, arsenic and various salts. A decline in the iatrochemical influence occurred when Boyle, in the middle of the 17th century, after the ground had been cleared of the remains of alchemy, pointed the true road to chemical progress; the road guarded by diligent experiment and stringent induction wherein the theorists were also the experimenters. Chemistry then became a science in fact and iatrochemistry became a division of chemistry.

The transition of iatrochemistry into pharmaceutical chemistry is not clearly marked. We think of pharmaceutical chemistry as having arisen from the works of Scheele, Serturner, Pelletiere, Caventou, Baume, Courtois, and a host of others. The results of their work were far reaching in their effects on pharmacy, medicine and chemistry. A single illustration will make this clear. Serturner working in his apothecary shop isolated morphine and described it in 1817 as a "new salifiable base". This announcement created a stir in chemical circles of that time because it completed the analogy between inorganic and organic chemistry. Inorganic

chemicals long had been classified as acids, salts and bases. Organic acids and salts were known but the organic bases were lacking. Serturner's salt forming base filled the gap in organic chemical classification for a time. When the alcohols were discovered to be the true organic bases a few years hence, the interest of most chemists in Serturner's discovery ceased. The importance of his discovery increased with time however, for (1) It marked the isolation of the first pure alkaloid from a crude drug. Thus it pointed the way and method of isolating a number of other principles such as other alkaloids and glycosides, etc, which continues in the work on hormones and vitamins in our time. (2) The isolation of active principles in pure form led to their administration in place of the crude drugs and their preparations. Through the use of pure principles, the accurate control of dosage became possible in a time before analytical methods of standardization were known. The accurate control of dosage made quantitative measurements of drug action possible so that Serturner's discovery has been said to have laid the foundation for modern pharmacology. By separating the active principle from inert matter, Serturner's discovery also paved the way for the hypodermic administration of medicines. Other discoveries in pharmacy have extensively influenced the allied sciences but we are more concerned with the influence of the allied sciences upon pharmacy.

The rapid increase in chemical knowledge following the establishment of analytical methods by Lavoisier and Liebig, the new concepts of the structure of organic molecules which followed Kekule's theory of the benzene ring, the discoveries of Van't Hoff and LeBel relative to stereoisomerism, the overthrow of the vitalistic doctrine after Wöhler transformed ammonium cyanate into urea, and numerous other profound researches in chemistry, especially the advance in the knowledge of atomic relationships, led to an understanding of the constitution of many naturally occurring substances that had been isolated in a pure condition after Serturner showed the way. Studies of the nature of the reactions and of the mode of genesis of these compounds threw light on their structure, and the knowledge thus gained enabled other workers to conceive of methods by which these compounds could be prepared synthetically. Synthetic organic chemistry progressed so rapidly that by the

beginning of the 20th century it was commonly said "that whenever the constitution of an organic compound is clearly understood its formation by synthesis becomes a practical possibility." The recognition of infections as due to the invasion of the body by living organisms following the work of Pasteur, Koch and others gave a new direction to the therapeutics of infective diseases and established the bacteriological era of 1880 to 1890 which was followed by the immunological era of 1890 to 1900. Lord Lister's application of Pasteur's discoveries in the field of surgery, the rise of endocrinology following the recognition of deficiency diseases caused by the lack of substances present in the normal body, the discovery of Roentgen and X-rays in the field of physics, the recent findings in plant pathology of the virus cause of disease and innumerable other advances in science have contributed to pharmaceutical and medical progress. These contributions more than those made from pharmacy itself have brought about the trend from the use of vegetable drugs and their preparations to the use of specific synthetic agents and symptomatic remedies, serums, vaccines and antitoxins, antiseptics and diagnostic agents and an ever growing list of new products.

These impacts coming at a time when research was subordinated to a position of insignificace in most of our educational and industrial organizations coupled with the rise of medical education and science led to the establishment of foundations and research grants for the development of therapeutic agents. While their work has enriched pharmacy, they have encroached upon a field that had been almost exclusively pharmaceutical. Here we are witnessing a breakdown of the borderlines between the professions and sciences that is occurring in every field.

Specialization has grown with science so that while a research worker can become well versed in a number of the common fundamentals of many sciences, he can become an expert in only one branch of one science. For example, Sir Humphrey Davy when a youth at the beginning of the nineteenth century outlined a scheme for his life of study. It included theology, botany, chemistry, physics, pharmacy, anatomy, surgery, mathematics, mechanics, history, logic and seven languages. It is said that he became well versed in all of them. Schlichter expressed it well when he said—

"We not only have scientists, we have chemists, we have colloid chemists, we have inorganic colloid chemists, we have areosol inorganic colloid chemists, and we not only have areosol inorganic colloid chemists but we have high temperature areosol inorganic colloid chemists." Thus the research worker at the time of Davy may be said to have comprehended a natural order while his descendent of today comprehends only a subspecies of science.

Specialization of individual ability does not give rise to a lone Scheele or a Serturner making far reaching discoveries in the back of an apothecary's shop but it has made possible the modern research laboratories of our present day pharmaceutical manufacturers. Here many departments each having a number of individual specialists in its ranks are brought together. In one establishment there are divisions of bacteriology, botany, pharmaceutical chemistry, synthetic chemistry, biological chemistry, germicides, mycology, nutrition, pathology, pharmacy, pharmacology, physiology, veterinary medicine, and clinical medicine. Some of these divisions include several sections, the biological division as an example consists of sections on tissue extracts, chemistry of bacterial products, and serum concentration. The reintegration of pharmaceutical research in laboratories of this type with specialized scientists coordinated and, with almost unlimited facilities, deliberately organized to produce new remedial agents holds forth great promise of progress.

The maker of medicines in the time of Paracelsus as a pharmacognosist collected and cured his drugs, as a pharmaceutical chemist he prepared his compounds, and as a pharmacist he compounded and dispensed these initial products. No marked change in the pharmacist's operations occurred in this country until the war of 1861. The demand for medicines in large quantities at that time led to the conversion of a few pharmacies into manufacturing plants. In the early years the manufacturers simply prepared on a large scale products that had been originally discovered through years of pharmaceutical experience and research. As they expanded, some concerns instituted research programs but usually under the dictum—"produce or get out." Later some of them, after learning that research pays, have adopted long range research policies where the research worker is relatively secure in his job in a coordinated lab-

oratory. We are pleased to refer to these companies as the ethical pharmaceutical companies. There are other manufacturers, not so ethical, which have contributed little or nothing to pharmaceutical research which need not be considered. It is interesting to note that the early competition between the industrial companies has resolved itself largely into competition between products with a seemingly unlimited and often unnecessary multiplicity of the latter.

There are many in our profession who continue to seek the return, in part at least, of manufacturing to the drug store. They overlook the fact that the complexity of modern business, with its facilities for distribution, the economy of mass production, the power of the trade mark and advertising, the burden of licenses and taxes, the need for standardization and control of products, and other factors but above all, the need for continued research, makes this return impracticable and unprofitable. We must resign ourselves here as in other spheres of human activity to the loss of an individual art to organized scientific production.

We have instances in pharmacy where we can designate individual workers as heroes of discovery. Our greatest claim for recognition however, is not in the discoveries of individuals but in the accomplishments through cumulative research and by the cooperation of industrial, college and other investigators in the standardization, stabilization and perfection of practically every type of product used in therapy. The result is that the people of this country have available the best pharmaceutical service of any people at any time in history. A large share of the credit for the quality of these products belongs to that small group of manufacturers that, while research lagged behind the other sciences in our educational institutions, have set well balanced teams of research workers to solving problems and developing new products without unduly subordinating the humanity service motive to the profit motive.

We need be concerned lest the future progress of pharmacy be retarded because our industrial leaders are not sufficiently concerned with laying the foundations for the industrial future by strongly supporting pure scientific work in pharmacy at the present time.

President Isaiah Bowman of Johns Hopkins has said: "The trade school exists for the admirable purpose of putting prac-

tically trained men into jobs; the universities exist among other things to create and expand the sciences that provide the jobs." The early American colleges of pharmacy existed for the purpose of putting practically trained men into jobs. They made little effort to found pharmaceutical education on the teaching of the fundamental sciences of biology, chemistry and physics. The regeneration of medical education in the decade of 1870 to 1880 with its subsequent rise and emphasis on research had no counterpart in pharmaceutical education. It is true that the establishment of the school of pharmacy at the University of Michigan in 1876 marked the beginning of a new trend in pharmaceutical education. This was without appreciable significance until the University of Wisconsin established a similar coordinated school in 1883. There under the late Dr. Power, research was encouraged. Later, under the direction of Dr. Kremers, research flourished and graduate work as it is now known in our universities was inaugurated in pharmacy. For too long a time Wisconsin stood alone in the creation and expansion of the sciences that make the jobs. Eventually, graduate students after imbibing the spirit of research that existed in Dr. Kremers laboratories went forth as disciples and established graduate work in other schools and they in turn have sent forth disciples. A number of our schools now offer a sound graduate education in pharmacy.

The question is often asked: "Can we continue to expand graduate education in pharmacy until most or all of our schools offer such work?" The answer to this question is difficult. We are afforded some insight to the answer through the observation that the continued expansion of research in biology, medicine, chemistry, and physics does not seem to have reached the saturation point. We also know that manufacturers in many cases have little or insufficient control and research staffs. Expansion of governmental regulation of drug and cosmetic products will call for more workers in manufacturing and in government laboratories. Many of our colleges have insufficient teachers. These facts added to the fact that research tends to create new jobs indicate that the danger of an oversupply of competent research workers in pharmacy is rather remote.

It may not be practicable to establish graduate education in pharmacy in all of our schools, but every school of phar-

macy worthy of the name should have one department in which the spirit of research resides. Teaching and research should be inseparable in our colleges. One who teaches without investigating the problems of his subject becomes a pedant dispensing knowledge at second hand. Association with younger investigators stimulates the more experienced researcher and keeps him alert to new points of view. It has been said "A man need not be given free time for research; he would still find time to do research if he had the spark to do it." There is some truth in this remark, but the spirit of research does not thrive where time and routine are of first importance. Too many of the teachers in our colleges of pharmacy are overburdened with teaching and routine. They often hold positions like that described by Oliver Wendell Holmes who taught anatomy and physiology at Harvard from 1847 to 1871, holding as he later remarked "not a chair but a settee."

The lack of financial support for research programs in our colleges of pharmacy has been deplored by a number of our leaders. Instances of wealth gained in pharmacy and used to encourage and make possible comprehensive studies in foreign fields are common. The remark by President Elliott of Harvard that "The first step toward obtaining an endowment is to deserve it" is true of pharmacy. Wishful thinking will not produce the desired results. It is our responsibility to do good work and then make known and interpret the results of our investigations so that others may know of our accomplishments. The National Conference on Pharmaceutical Research has made a very good beginning in this direction. But a distinction should always be made between publication and publicity.

It would appear to be self evident that the value of literature in the sciences is so well known that mention of the subject is unjustified. Nevertheless, we frequently see evidences of incomplete searches. Occasionally, we find those who feel apparently that they need have neither interest nor responsibility in maintaining the highest possible standards of scientific publication in pharmacy. Of course, the results of an investigation should always be published if they are to be of value at all. The research achievements of pharmacy should be shared with the public but only after they have been received and subjected to criticism by other work-

ers competent to judge of their merits. When a research worker directly or indirectly proclaims his work and virtues to the public press, he often unconsciously, enters the field of the mountebank, endangers the reputation of the institution with which he is associated and compromises other workers in the same line of work. Our status in the professions and in science is determined by the quality of our publications and not by the publicity we secure. Consequently, we should make every effort to elevate the scientific quality of our journal by contributing the results of our best efforts to it.

Pharmacy has had to become one of the most highly organized divisions of science to meet the varied and expanding needs of modern therapy. It now needs pastures and stables, the cooperation of abattoirs, chemical plants adapted to the difficult synthesis of complex and delicate compounds or to the separation of unstable natural principles, incubation rooms for the large scale culture of a wide variety of organisms and sterile rooms for the manipulation of products. It needs chemists, bacteriologists, pharmacologists and many other services that have little to do with the art of the individual pharmacist known to our fathers compounding their pills and potions among the bottles and jars of the prescription counter. To go forward we must submit to the guidance of progressive and continuous research and education. I mean research and education undertaken in the spirit of free inquiry often without a practical aim or product in view except the increase of fundamental knowledge.

The research of today more than anything else will determine what pharmacy will be tomorrow. We have work to do individually and within the ranks of our fellow pharmacists to impress this truth upon them. Unfortunately, we can not follow the example of the City Council, which, by motion, resolved: "That the Fourth Ward Marsh be, and it hereby is, drained."

How the Pharmaceutical Journals Could Help the Teachers of Pharmacy[1]

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There are many adjuncts to good teaching and libraries are not the least of these even for schools of pharmacy. In addition to books every library possesses a certain selection of journals and periodicals. These are valuable not only currently but are often referred to after they have been bound and shelved in the stacks. Good journals are useful as references for many years, some naturally being more valuable than others.

In the rapidly advancing professions and sciences it is almost imperative that both student and teacher read, to the extent of their time and ability, some of the journals in their fields of interest. Pharmacy is a profession and a science which is anchored in many sciences. This necessitates reading in many branches of science and technology. Of these fields pharmacy proper is more poorly served than we have a right to expect, speaking from the point of view of the student and teacher. Very few pharmacy journals are devoted to professional practices and but one in America is devoted entirely to scientific discussion. Much of the material that one finds in the various current journals is of a commercial and general nature, quite without value for classroom work.

The so-called trade journals in pharmacy seem to make it a practice to include one or two articles of professional interest in each issue. Such papers are apt to be engulfed in advertising making it annoying to one who seeks them out for their interest. It is not our purpose to discuss advertising except to say that the most worthwhile technical and professional literature is not all mixed up with advertising which is of little interest or value to the average reader.

Some of our trade journals in pharmacy and other branches of technology and science carry so much advertising that the binding of them is a problem.

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[1]Read before the Conference of Teachers of Pharmacy at the Minneapolis, 1938, meeting.

More serious than all of this is the fact that the publishers of the pharmacy trade journals do not see fit to page the volumes consecutively and, in addition to this, do not furnish an index for the volume. The problem of locating papers of interest in such journals is a difficult task, in fact so annoying that one often has to give up the search. The publisher's answer to this objection would be that it costs money to prepare indexes. We will grant this but point out that those carrying the greatest amount of advertising are often the worst offenders. It would not seem that the matter of cost should be a very good reason for not furnishing reasonably good volume indexes. The matter of consecutive paging seems so simple that no publisher should object to doing it.

If these suggestions are of no concern to the publishers of our trade journals, then our objections are of no avail and we might well take the advice of a librarian who questioned the value of bothering about binding and using such journals. He said read them for their current news and then discard them. This is pretty hard on our professional pride. A student asked me once to name the best American journals of pharmacy. I was forced to say that for the commercial pharmacist there are several but for the technical and scientific pharmacist the list is entirely too small.

Perhaps it would not be out of place to jot down a number of small things that editors and publishers of pharmacy journals should do to improve their publications and, at the same time, aid teachers and students of pharmacy.

1. Page consecutively through the volume.
2. Publish a subject and author index for the volume, with the last number.
3. Publish but one volume per year.
4. Put a publication date upon all price lists and year books and page them separately.
5. Place the volume number in Arabic on the outside of the cover in a conspicuous place.
6. Have the cover of such a quality that it will easily take a stamp or pencil notations.
7. Minimize the practice of publishing advertising on one side of a page and reading matter on the other.
8. Give the names and office or position of the authors of all professional articles.

9. Cite the author and source of all abstracts reported. Do not have the reader wondering where he could find the article in full.

10. In listing new remedies or proprietaries index them in such a way as to be easily found.

11. Make the contents page for each number clear, attractive, and easy to locate.

12. The title of almost every useful technical journal is abbreviated by the abstracter. The publisher should, by agreement with the proper authorities, adopt an abbreviation and place it on the contents page along with other information.

13. See that all book reviews are given by disinterested persons. Pharmacists and teachers of pharmacy depend upon such reviews to guide them in the purchase of books.

14. The paper should be of such quality as to be in good shape for years to come. The strength, durability, color, gloss, readability, and other qualities and items have been decided upon for scientific purposes.

15. Avoid changing the format in the middle of a volume. Give advance notice if such changes are contemplated.

16. Page the advertising separately when there are several full pages of it.

PROFESSIONAL ASSOCIATION JOURNALS

While upon the subject of journals it would seem appropriate to compare pharmacy with her sister professions, medicine, and dentistry. The Journal of the American Medical Association has a circulation of about 109,000. There are about 145,000 licensed physicians in the country. This would indicate that about 75 per cent of them receive their association journal. There are about 65,000 licensed dentists in America. The Journal of the American Dental Association has a circulation of about 47,000, therefore about 72 per cent of the dentists receive their journal. When it comes to pharmacy the situation is not at all encouraging. There are approximately 100,000 registered pharmacists in the United States and perhaps 10,000 assistant registered men. The Journal of the American Pharmaceutical Association has a subscription list of about 3,500. This indicates that less than 4 per cent of all our licensed pharmacists are members

of our parent national organization. It may be assumed, therefore, that more than 96 per cent of all the pharmacists never see the association journal. In the face of these figures one would hardly expect the American Pharmaceutical Association, through the columns of its organ the Journal, to make much of a professional impact upon the 96 per cent who never hear of its doings. It is to be regretted that we do not have a more hopeful outlook so far as organized professional pharmacy is concerned.

There are, of course, many other pharmacy journals. But from the information available not one of them has a subscription list sufficiently large to reach more than 50 per cent of all the pharmacists on matters chiefly of general and trade rather than of professional interests.

A great portion of the field of professional and scientific journalism, as pertains to pharmacy, has lain fallow altogether too long. It will take courage to break ground in this field. But really American pharmacy needs to get its association journal to 75 per cent of its one hundred thousand and more practicing pharmacists. When that day comes we will have an esprit de corps worthy of a profession.

The Use of the Library in Undergraduate Instruction[1]

EDWARD J. IRELAND
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The subject which has been assigned to me is one which I consider is of great importance, and I appreciate the opportunity given me to express some of the thoughts on library instruction which have been accumulating in my mind since I began the study of pharmacy.

You may have a curiosity to learn what I might add to your knowledge of this subject which you do not already know. I realized that in accepting this assignment I was allowing myself to become vulnerable to much criticism, yet I felt as Marden[2] did when he stated in his delightful

[1]Read before the Conference of Teachers of Pharmacy at the Minneapolis, 1938, meeting.

[2]Marden, O. S. *Peace, Power, and Plenty*, p. 165.

book, "Peace, Power, and Plenty", "It does not matter what other people think of you, of your plans, or your aims. No matter if they call you visionary, a crank or a dreamer; you must believe in yourself." I sincerely believe all that I am going to tell you.

Before we go into the development of the practical side of this subject, let us understand our terms. When we think of instruction of any kind, we think of it in terms; (1) of the subject to be taught, (2) the subject material, and (3) the teacher. I shall not debate with you as to which of these should be first, because I believe that they are all of prime importance. For convenience, let us begin with the subject, the undergraduate student who matriculates in our schools to learn the fundamentals of pharmacy. He enters in most instances from a high school with much unorganized information, a lack of respect for study, and with a faint idea of why he is here. Many educational systems today are revising their curricula in order to eliminate the latter factor. The other two factors must be improved jointly by the teacher and the student. The second term, subject material, ought to include specific course information together with sufficient teaching facilities whether it be library or laboratory. Finally the teacher the most important of this trinity, as we shall see, must necessarily be fitted by training or education for the courses which he plans to teach.

Now let us see what happens in Pharmacy. The student entering college may or may not have had some instruction in the use of the library for pursuing his studies. If he has had some instruction, he has taken it lightly as a part of a necessary evil. In the early weeks of his orientation at college he may again be exposed to the same instruction; how to use the files, card catalogue system of classification, etc., but in the majority of cases the instruction at best is limited. During the first three years of his collegiate career, he may be able to escape being confronted with serious library work by relying on a series of parasitic methods which the indolent student readily finds available; by allowing someone else to do the work. It cannot be denied that this condition is not all too prevalent in our schools of pharmacy. Throughout this period, very little attention has been directed to the student's library instruction. He

has not been taught to love the library and the books which have been collected there for his use. The old trial and error method prevails, or some kindly librarian, who is not trained in the science of pharmacy gives him assistance. What he has learned is the result of a request by his teacher (?) to "go and look it up in the literature." Scientific guidance is lacking. In the student's senior year, if he is writing a thesis, he is confronted for the first time with the necessity of knowing more about library methods. Inasmuch as the work becomes more difficult as it progresses, he soon develops a dislike for the library, and his interest in books gradually diminshes. By the time he is ready to graduate, if he has not already sold his books to the buyer of a large text-book purchasing firm, who presents himself on our campuses each year, he tosses them into his trunk with an exclamation that his studying days are over. It is true that I have given you a very pessimistic picture of some of our pharmacy graduates, but I have done so in order to show you by contrast what can be done to improve the unfortunate condition. Before I proceed allow me to say a word about the libraries in our pharmacy schools. They are in a pitiful condition in some schools, and they lack, what might be termed, necessary working facilities, in others. When we know that these can easily be remedied, we cannot help but ask the question; *Why is not something being done?*

Regarding the teacher, if he is not prepared to give competent library instruction, he can study methods and equip himself for the work in the future. Much valuable information was disseminated by Alexander[3] during our New York convention last year. The question has often been asked why teachers do not do something about it. Bishop[4] has well stated his suggestion as follows:

"May I as a layman, venture a suggestion to you who are experts? I feel that most of you tend to ignore in the organization of your work of instruction any presentation of two things which help to mark a scientist of real distinction. The first of these is a knowledge of how to use to the full the various bibliographic tools provided. It seems to me that such instruction in their use is a real necessity—perhaps not for elementary classes, but certainly for any study of an advanced character. The loss which comes from an

[3]Alexander, C., Am. Jr. Pharm. Educ. *2*, (2), p. 172.
[4]Science, *56*, (1922), 214.

ignorance of what has been done on any given problem is pathetic—loss of time, unnecessary labor, discouragement. It is a loss which can be avoided by very simple means. The gain which comes with full knowledge of previously published results is invaluable. It marks the successful from the halting start on any task. The complexity of the bibliographic indexing in most fields is so great that there is real need for formal instruction in handling bibliographic tools. No one of you ignores instruction in laboratory method. Should he overlook the need of instruction in bibliographic method? My suggestion is that students should not be left to pick up either bibliographic method or a general view of their subject from incidental allusion or chance comment. The need of both is too great and too serious to warrant the indifference or neglect which they now seem to encounter."

None of us can deny that what Bishop has stated is true, but what can we do about it? Allow me to cite a personal experience from my teaching during the past year. In my class in pharmacognosy I felt that my students knew very little concerning library technique and I knew that they did not have a respect for books from the manner in which they disfigured them by heavily inking the exterior of them with their initials and amateur attempts at art. I did not reprimand them, but I decided to see what could be done to interest them in the library, and change their attitude toward books. This was done by several methods which I shall describe briefly. In the first instance, personal experiences of book collecting intrigued more than seventy-five per cent of the class enough so that during the spring recess they began to browse in many of the old bookstores in the larger cities of the state, and develop a desire to build a small pharmaceutical library for future use. I believe that they all fully realize that "to desire to have many books, and never use them, is like a child that will have a candle burning by him all the while he is sleeping". Another method which was used with much satisfaction was the suggestion of browsing in the main library on Saturday afternoon. This suggestion was accepted by several in the class with an increase in interest in the library, and a pronounced appreciation for the suggestion. Personal appearance of the instructor in the library will afford good example to the students. Constructive suggestions regarding library technique has changed the viewpoint of more than one of the students. A brief discussion on the manner of preserving books made a noticeable impression upon others. I also found that the introduction of the subject

of some proprietary or copyrighted article into a personal discussion with one reluctant student who failed to "see the light" gave me the opportunity of taking him to the library, and showing him how to use the patent indices. This student later developed a remarkable interest in library work. Gradually by indirect methods as I have described, they became conscious of the importance of self-initiative in library study. Finally, after I felt that they had all been won over to the desire to learn the best methods of library technique, I planned this problem:

I learned from examinations that in spite of careful instruction many of them ignored the importance of drug commerce. About this time an article appeared in the Drug and Cosmetic Industry concerning the extensive itinerary of Dr. Guenther of Fritische Bros. Co. I felt that if the student could evaluate the cost of this trip, he would appreciate some of the problems involved in the distribution of crude drugs and volatile oils. Subsequently they were asked to prepare a topic including the following:

1. Biography of Dr. Guenther.
2. A sketched outline of Dr. Guenther's travels.
3. An estimated value of the trip to the company.
4. Brief history of the company.
5. Cost of air travel and route.
6. Brief history of the Berbers.
7. Name of importing firms in Zanzibar.
8. Steamship routes to Zanzibar.
9. Name of the only hotel in Zanzibar (not given in Guenther's report.)
10. Estimated cost of the trip for the company. (All in foreign currency.)

When this assignment was given, the response on the part of the students was surprising. They immediately seemed to sense that they were challenged, and in a scholarly manner they proceeded to use the library as a tool in their study. Needless to say, I was very well pleased with their attitude and the results of their work. Weeks after the assigment had been received and graded, students showed that they were still interested in the assignment by reporting subsequent articles by Dr. Guenther which appeared in later numbers of the Journal of the Drug and Cosmetic Industry. This is just one example of the type of problems which might be used in library instruction for the undergraduate. I felt that they learned many lessons from

this particular assignment, the least of which was confidence that they were able to overcome obstacles. I do not wish to tax your patience further with exposition regarding this assignment but I feel teachers in our schools of pharmacy should develop methods in library research as a guide for our undergraduate students. It is my opinion that if we had a text such as Mellon's Chemical Publications based upon pharmaceutical problems arising in the library, teachers in pharmacy would become more interested and qualified to give constructive library instruction. The undergraduate would have a sincere desire for knowledge, and the graduating senior would leave his respective school with the knowledge that all problems may be solved. His love and appreciation for books would encourage him to build a small pharmaceutical library, and in the future we would find a presentable "working" library instead of a row of obsolete, dusty dispensatories and formularies which are never used.

How Would the Development of a System of Socialized Medicine Affect Pharmaceutical Education and Practice?

A panel discussion conducted by Earl R. Serles, Division of Pharmacy, South Dakota State College, at the 1938 meeting of the American Association of Colleges of Pharmacy at Minneapolis.

In presenting Dean Serles, President Muldoon spoke as follows: Probably no topic is causing more discussion in the professional and the lay press at the present time than the question of socialized medicine. Whether the American Medical Association likes it or not, whether the American Pharmaceutical Association likes it, it is evident that some form of socialized medicine is probably on the way. There is a growing belief that through government aid and control a better and more efficient distribution of medical services can be obtained. Perhaps it can.

If it is to come, pharmacy is just as much concerned as is medicine. In all of the public discussion up to the present time pharmacy has been ignored. Pharmacy cannot

be ignored and if, under whatever conditions come, pharmacy is to be treated justly, pharmacists must see that it is done.

So tonight, in order to give breadth to our information on this subject, in order to clarify our opinion about it, we have asked Dean Serles, and faculty members of several colleges to prepare for us a panel discussion on a topic that I will very briefly call socialized medicine.

Dean Serles in presenting the subject and speakers spoke as follows: As President Muldoon attempted in his introduction to lay the groundwork for this panel discussion, he gave to this particular topic we are to build around this evening the title of "Socialized Medicine". So far as I know, there does not exist in the literature of today any concerted thought which has been publicly expressed at least, that those agencies which are attempting the establishment of federal practice in the healing art has positively included pharmacy. However, we are confronted with some very outstanding facts which I should like briefly to call to your attention.

First, the President of the United States has publicly announced his intention to bring all agencies within his power to work upon the solution of this very great problem. The magnitude of the problem seems to be summed up in his statement that one-third of the population of the United States is underfed and ill-housed.

We are startled again to serious consideration of the problem by the fact that 430 eminent physicians, including many of the leaders of thought in American medicine, have concluded that the health of the citizenship of our country is a government responsibility.

We are further brought to consider this all-important problem because of the statement made at the last meeting of the American Association of Industrial Physicians, numbering approximately 1500 and serving approximately fifteen million of people at what they claim to be a yearly expense of six billions of dollars.

Thinking minds in American pharmacy cannot help but realize that since this enormous program has been launched by the agencies which I have just mentioned, it behooves us as teachers or leaders, of whatever rank or grade, to begin to wonder what effect it will have upon the future of American pharmacy.

To confine our discussion to concrete points, I chose to center it around the report of Miss Josephine Roche, chairman of the Committee to Coordinate Health and the Welfare Activities of the United States. Her report is fairly well covered in the Journal of the American Medical Association of February 16, 1938. But for fear some of you may not be thoroughly familiar with it, I will call your attention to several rather distinct recommendations which she made to the President. Her general introduction would seem to indicate that she has had at her disposal many agencies in compiling statistics, and considerable advice from professional groups and government bureaus in arriving at her conclusions. Let me state just one or two of them.

She says that every day four million persons are disabled by sickness in the United States, that every year seventy million lose one billion days of working power in this country. She gives us a little hope, however, regarding the ten billions of dollars, because her figure of that amount is an estimated value of the earning capacity of the citizenship of America, plus what it costs to bury you, plus the inconvenience to your employer when you die.

She gives us another ray of hope by stating that she thinks we have sufficient scientific knowledge to provide adequate medical care for every man, woman and child now living. She deplores the fact, however, that the funds and the distribution of this service is entirely inadequate, although she admits that our death rate in 1900 was eighteen per thousand and that our present service of medical care—when I say "medical care", I refer of course, to all branches of the healing art—has lowered that death rate to eleven per thousand in 1935.

She strikes at the very heart of our emotions by calling attention to the dire need of an expansion of maternal and child health service. She arrives at this conclusion because she states there are seventy-five thousand stillborn babies in the United States annually; that another sixty-nine thousand die in the first month of their lives; that twelve thousand five hundred mothers die either at the time of delivery or within a period of one year thereafter, and she deplores the fact that these figures are twice the rates as shown in Sweden.

She deplores the fact that we do not have a comprehensive

public health service adequate to attack tuberculosis, pneumonia, the venereal diseases, cancer, diabetes, and mental cases.

She further deplores the fact that the income of the average individual citizen is not adequate to provide him with the necessary medical care, so that he may enjoy a healthful life from childhood to a normal expectancy.

She admonishes us that we have 165,000 physicians in the United States, or approximately 128 per 100,000 persons. She commends us for the fact that we have 71,000 dentists, or approximately 58 per 100,000. She commends us that we have an adequate if not an oversupply of nurses, except for the fact that a very large majority of them are not adequately trained, and that in large part a good deal of the maternal care in child labor is taken care of by the midwife.

She entirely ignores any statement as to the number of registered pharmacists in the United States, or whether their service is satisfactory or dependable.

She further admonishes us from every angle that practically every phase of hospitalization needs vast improvement. Her single thought along that line is sufficient, when she points out that we lack approximately one-half million of bed service for the mentally incompetent.

I trust that I have placed before you sufficient information from Miss Roche's report to justify the topics which we are to discuss here this evening.

The papers forming the basis of the panel discussion were then read by their respective authors.

Effect of Adoption of Socialized Medicine on the Number of Retail Pharmacies Now Established

LESLIE M. OHMART
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In the event of the adoption of some form of socialized medicine in the United States, it seems reasonable to assume that the effect of such action on the number of retail pharmacies would make itself felt chiefly in the field of professional business, that is, in the volume of business done

in prescriptions, proprietary medicines, and sickroom supplies. Let us attempt, therefore, to estimate the direction and extent of the effect in these fields.

There is little doubt that the total number of prescriptions filled would be increased. There are a number of reasons for this. First, because of the lack of financial responsibility of the individual, he would more readily seek medical advice than at present. Second, participating physicians would probably find it to their interest to write prescriptions rather freely. The reduced earning power of the physician under a system of socialized medicine, and the altered relationship with his patient makes it imperative for the physician to use every means to increase and retain his clientele. It has been observed in other countries having systems of socialized medicine that there is a high positive correlation between the number of prescriptions per patient written by a physician and the number of patients seen by him. Third, it is extremely probable that sick benefits would be an integral part of any system of socialized medicine adopted. If this were so, there would undoubtedly be a great deal of malingering. A certificate from a participating physician would be necessary for the malingerer to obtain his sick benefit. The certificate, in most cases, would be accompanied by prescriptions. Finally, if under socialized medicine it were no longer profitable for physicians to dispense medicines, it is likely that there would be little of this practice. Whether retail pharmacists would enjoy all of the increase in the number of prescriptions written is doubtful. The experiences of governmental units with welfare prescriptions during the past few years indicate that the difficulty of establishing a schedule of prescription prices and of dealing with many retail stores would lead a national scheme of socialized medicine to seek another solution to the problem of dispensing medicines. The most obvious solution would be to establish dispensaries wherever the density of population would justify such a course. In less densely populated areas retail pharmacists probably would experience an increase in prescription business.

Because of the close association of prescription and sickroom supplies, it seems fair to assume that the observations which have been made regarding prescriptions would apply to sickroom supplies as well.

Under a system of socialized medicine, with medical attention available without direct cost to all below a certain income level, it would appear likely that self-medication would decrease and thus diminish the sale of proprietary or so-called "patent" medicines. In the light of the experience of other countries, however, this is open to question. Competent observers have stated that since the advent of socialized medicine in Germany, there has been a noticeable increase in the sale of medicines of this type, the reason assigned being the decline in the quality of medical service. In England, no appreciable decrease in the sale of proprietaries has been observed since the adoption of socialized medicine.

Professional business constitutes a varying but minor portion of the business volume of most retail pharmacies. Under socialized medicine, a considerable part of the population would be exempt from participation. Consideration of these two factors leads to the conclusion that an increase in professional business incident to the adoption of socialized medicine would have little effect on the total number of retail stores. If dispensaries were established as a part of the scheme, however, that would be quite another matter. It might well mean that retail pharmacies in the areas served by such dispensaries would lose nearly all of their professional business. Since congested areas, favorable to the establishment of dispensaries, are inhabited chiefly by low income groups for whom participation would be compulsory, this is not a remote possibility. The effect would be particularly severe on the professional type of store.

Socialized Medicine and the Curricula of Colleges of Pharmacy

GLENN L. JENKINS
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The trend of the whole economic setup toward the relief of the under-privileged, added to the beginnings which local and national government has already made in the care of the sick and disabled, seems to point inevitably to some system of public health control. Few people realize the extent to which the federal government has broadened its responsibili-

ties in this direction since congress in 1798 inaugurated the United States Public Health Service by the founding of the marine hospital for the care of sick and disabled sailors. Today, the government operates three-fourths of the tuberculosis hospitals, one-third of the general hospitals, and practically all of the institutions for the insane in the country. In the care of the indigent and others, the control of milk and water supplies, the inspection of foods and drugs, the examination of the eyes, ears and teeth of school children, the prevention of epidemics, the provision of parks, playgrounds and swimming pools, and in many other ways, the public health authorities are constantly widening their activities.

All recent discussions of socialized medicine indicate that it will take one of three forms: 1. A subsidy to aid in defraying the cost of medical care. 2. An insurance scheme patterned after that established in England wherein workers contribute a part of their earnings for health insurance. 3. Social control of all public health services as in the Soviet Union. It is probable that a start made with an insurance scheme or subsidy will ultimately lead to complete social control.

The effect of any of these forms of socialized medicine on the curricula of colleges of pharmacy is difficult to predict. If the control should take a form which would sharply limit free inquiry, forbid criticism, regiment judgment and thus stop up the springs of science our curricula would be materially affected. If far reaching and permanent measures intended to replace academic self government by political control in our professional schools should ultimately ensue, it would be disastrous to higher education, in general, in its effect on institutions, faculties and curricula alike.

There is nothing peculiar about the arts and science of pharmacy. They are only chemistry, physics and biology directed toward particular ends, namely, the development and preparation of agents for the prevention, mitigation and cure of disease. Our curricula, founded on these sciences, have evolved slowly through changes in education and science. That changes are reflected slowly in our curricula is evidenced by the fact that the bacteriological era of 1870 to 1880 and the transition from the use of vegetable drug products to synthetic chemical products which has been

under way since 1880 has not brought about a change in most of our curricula until recently. The tempo of curricula revision has increased in recent years with closer organization and improvement in the educational standards. We may expect, therefore, that social changes and changes in science will find expression in our curricula with less delay in the future. Nevertheless, I venture to predict that no change in the curriculum of a given college of pharmacy will be caused by socialized medicine comparable to that which ensues when the administration of the college changes.

Assuming that the socialization of pharmacy along with other public health agencies should occur, would the need for a liberal education and a sound knowledge of the basic sciences on the part of pharmacists be lessened? I do not think so. There might be more need for the knowledge and skill of the pharmacist than now. It is probable that some form of socialized control would require a more highly trained personnel capable of assuming more professional responsibility in public health matters than we now have in our drug stores. It might eventually lead to the restriction of the dispensing of medicines to pharmacists and thereby increase the demand for professional services. It might eliminate ultimately some of the merchandising activities from our drug stores and result in dropping the corresponding courses from some of our curricula.

There is one danger that confronts pharmacy and pharmaceutical education in any social control program that may be inaugurated. It is the danger that the practice of pharmacy and pharmaceutical education will be subordinated to medicine or politics. Our only security against this danger is strong organization and everlasting vigilance to protect our profession and obtain for those engaged in it a proper share and responsibility in any public health service program that may be undertaken.

In his Republic, Plato pointed out as one of the great dangers of democracy, the tendency of its leaders to fall under the spell of enchantment. He referred to the lure of new and untried panaceas for all kinds of social and economic ills. For those inclined to view this tendency towards socialized medicine in our country with alarm in so far as it pertains to pharmaceutical education, it is well to recall the words of the president of Harvard, Conant, who said, "It

was never more important to remember that universities have outlived changes in government."

Socialized Medicine and Its Probable Effect on Pharmaceutical Research

L. WAIT RISING
College of Pharmacy, University of Washington

When Dean Searles requested that I discuss the subject of socialized medicine with respect to its effect on pharmaceutical research, I was appalled at the magnitude of the task and so decided to refuse. In matters of this kind one is expected to deal in facts, and one is also supposed to stand on a premise which is true so that reasoning from it will not lead to a maze of false conclusions. We in America are still in the theory stage as far as socialized medicine is concerned.

How can one collect and correlate non-existent facts about a not intangible but certainly very nebulous theory of this kind? How can one build up a factual premise for purposes of argument or discussion when as yet there is no meeting of the minds regarding the subject under discussion? True, there are available reports from other countries where experiments have been going on, but in this day they have very little value. Their authenticity cannot always be certified, and even if it could the facts portrayed are the product of peoples and conditions foreign to our own. One can elaborate at length on the social or economic life of a village in Russia, for example, but the factual portrayal has small significance in controlling life in an American hamlet.

The picture then resolves itself into the incontrovertible statement that when we speak of socialized medicine in America we have no real conception of just what the term embraces. We do not know how extensive or how limited its services are to be. We do not know who would administer it and we do not even know that the bulk of the people want it. True, we can surmise. It is equally true that we can probably surmise with a fair degree of accuracy.

It is the idea behind the last statement that caused me to change my mind and answer Dean Searles in the affirma-

tive. Man succumbs all too frequently to the challenge of surmise, of predicting the future, and to the feeling that after all his opinions may be as good as those of his contemporaries. In undertaking this role I am doing exactly what Dean Searles asked those of us participating in the discussion not to do, namely, avoid opinions and stress facts. Consideration of facts pertaining to my particular phase I have already dismissed because as yet for America they are practically non-existent. Opinions then are all that remain. Those few expressed are based on what I believe to be the temperament, education, and reactions toward public health of the people who are going to design and participate in American socialized medicine. Predictions based on opinions, even though at times they are inaccurate, serve a valuable purpose. They arouse discussion, particularly if many people are in disagreement, which brings with it thought, and thought, deep and clear, is what we need in quantity before the problem of socialized medicine lands squarely in the laps of all of us. I believe it is safe to say that it inevitably will and it is high time we were preparing an intelligent reception.

In order to weigh the possible effects on pharmaceutical research of a socialized scheme for medicating the nation, we must first define the field of that research, determine the sources from which it emanates, then attempt to ascertain the effect of the new influences and control on those sources. The issue immediately becomes highly controversial. Until we can define pharmacy, how can we define pharmaceutical research? Even our textbooks are not in agreement on the former.

For this paper, however, let me arbitrarily limit the field to the developing of new medicines, the improvement of old ones, alteration of processes and plants, and studies in stabilization, storage, dispensing, and administration of medicines.

Where do these activities originate? In manufacturing houses, colleges of pharmacy, colleges of medicine, foundation laboratories, government laboratories, and occasionally in a prescription pharmacy or a doctor's office.

What are the new influences which would be brought to bear on these activities as a result of socialized medicine? In order to answer logically one must know exactly the form of

the new scheme, and trying to settle that is like trying to get a democrat and a republican to agree on a candidate for president. But one basic fact, regardless of all else, is that the new order if carried to its ultimate conclusion would remove the profit motive from both pharmacy and medicine. Parenthetically, the fate of socialized medicine is going to depend on whether the friends or enemies of the profit system in public health maintenance are in the majority.

How would the removal of the profit motive affect the workers in the research field? The desire for much in the way of financial gain is ordinarily not the principle motivating force in their lives. Scientists as a group are so constructed psychologically that they care more for their professional reputations than they do for riches. Given a reasonable living they will go on indefinitely producing research of creditable quality. From the point of view of the average research worker, I believe it is safe to assume that he would have little interest in how medical care was managed as long as he was given opportunity to satisfy his desire for creative investigation.

Education can be cited to prove the contention just made. Everyone will agree that education has been socialized for a very long time. It is paid for by taxes, administered by goverment, and is largely free for the masses. It is one of our largest businesses, non-profit or otherwise, and it touches intimately and seriously the lives of almost every human being in our country. In these respects it is surely analogous to socialized medicine. Those of us listening to this discussion are a part of the system. Many of us earn and hope to continue earning our entire livelihood under its regime. Our salaries are small; comparable abilities in industry command far greater remuneration, yet the fire and enthusiasm for our work and its calibre and volume are not one whit diminshed. Regardless of the methods used in dispensing medicines and medical advice to the public, our own contributions to pharmaceutical research would undoubtedly continue. Are we essentially different from other scientists engaged in the same type of research?

One of the very real questions, however, under a system which removes all or most of the profit advantages in making medicine as a part of the general plan of socialized medicine is whether or not the manufacturers would find it either

desirable or possible to continue their extensive research programs. Under the present system their economic success is frequently in direct proportion to the value of the products resulting from these activities. Remove the stimulus of competition and what is going to happen to the research fathered by it? If socialized medicine would break down the structure supporting these important centers for research, the annual increment of worth while work would be greatly reduced and many promising, talented men forced into other fields.

On the other hand, the increasing interest of the government in public health might lead, among other things, to large appropriations for general pharmaceutical research. Material assistance dealt out in the manner of the present disbursing policy should mean millions for single research problems where industry now spends thousands. Thus it is conceivable that research would grow rather than diminish and further, freed from the responsibility of profit it could sometimes be directed into more humanitarian channels. It is really not fantastic to feel that if and when socialized medicine does come, a part of its policy will be well-considered and well-supported pharmaceutical research. I have less fear on that score than I have that the practice of medicine will appear less lucrative and therefore attract smaller numbers of the more desirable men.

The Scope and Cost of Professional Service

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The statistical data presented for this discussion represents a review of the studies by the Committee on the Cost of Medical Care. Credit is accorded these publications.

The scope and cost of professional service as pertains to pharmacy is so interwoven with that of general medical service that it is rather difficult to draw sharp lines of demarcation.

The abstract of Publication No. 14, "The Costs of Medicine", calls attention to the fact that it is not always easy for physician and pharmacist to keep within the bounds

which their respective professional codes and standards have established. Some doctors compound and dispense medicines, they often prescribe medicines already compounded under proprietary names thereby eliminating extemporaneous compounding. This is met by the pharmacist by advocating to the physical official or nonproprietary products and by promoting the sale of home remedies and proprietaries. This has made evaluation difficult.

It is estimated that 165,000,000 prescriptions, (new and refills) are filled annually in the pharmacies of the United States at an estimated cost of $190,000,000, while $525,000,000 represents the estimated amounts spent for self medication, making a total of $715,000,000. It is further estimated that $70,000,000 or 10 percent of the total bill goes for advertising, most of which is chargeable to proprietary items.

Referring to the tables from abstract of Publication No. 25, one finds this statement, quote, "On the basis of these data, it may be estimated that the cost of furnishing adequate medical care would be approximately $36.00 per capita, of which $10.70 would represent the cost of dental care."

The Committee does not consider the cost of medical care, $3,656,000,000 an undue strain on the natural resources when considered in the light of the national income. They further state, "The ability of individual families to pay or to afford the costs of medical service they now receive admits of no definite answer."

The inability of those people in the lower income groups to pay for medical attention led those particularly endowed with wealth to seek a solution to the problem. Funds were raised, hospitals were endowed and in return those unable to pay (chiselers excepted) were given in most instances good medical attention at little or no cost. This effort followed by an ever increasing demand led to community effort, resulting in collections through community funds and finally these funds being inadequate, taxation for direct relief followed in some communities, but medical service is still administered in most states by independent agencies.

The poor have now been provided for, the financially able can care for themselves, but throughout the studies that have been consulted, the great middle class with moderate

incomes find it difficult to meet the cost of medical care for their families.

Industry has sought to alleviate this condition in many instances by inaugurating provisions for the care of their employees and in some instances the dependents as well.

The Endicott Johnson study No. 5 by the Committee on the Costs of Medical Care (1928) covers 15,000 workers and their families, the average annual cost of complete medical service per person was $21.81.

The Metropolitan Life Insurance Company study (1929) covering 3281 families of industrial workers shows an annual average per person cost for medical service of $26.96. This did not represent group effort but data was obtained by submitting forms to the families represented, upon which they detailed their expenditures for the service. Extra household items not included in this total but which are necessary for the treatment of the sick is approximately 84 percent of the total medical cost but chargeable to only 36 percent of the total number of families. 83 percent of the total families paid for medicines.

To meet the demand of moderate cost medical care, the hospitals in nearly all large centers of population have inaugurated a form of hospital insurance but applicable only in the locality where the insurance is issued. The cost approximates $9.00 per year for semi-private service and members of the family of the insured may likewise be insured for one-half the cost and are eligible to receive one-half benefit. This service includes everything except the fee of the attending physician.

A recent estimate of pharmaceutical costs in hospitalization based upon admissions of in-patients to hospitals for acute diseases as reported in the American Medical Association Journal of March 26, 1938, using as average cost those figures obtained by a detailed study of fourteen hospitals, resulted in the following:

(Figures in round numbers)

Annual admissions to hospitals	8,700,000
Total annual cost (in-patient)	$17,400,000
Total annual cost (out-patient)	6,960,000
Total annual cost	24,360,000

The cost of drugs and pharmaceutical service (salaries, etc.)

is approximately $2.00 per admission. The average (in-patient) time per admission is ten days. The out-patient cost is approximately 40 percent that of the in-patient cost for drugs and pharmaceutical service.

These figures were checked against the average cost per patient in one of our hospitals and they were found to be in very close agreement.

A budget of $885,000,000 has recently been proposed for the federal government's participation in the extension of medical service for those unable to pay for it.

How will it affect pharmacy and what part will pharmacy play in it?

Pharmaceutical Legislation in Relation to Socialized Medicine

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In a survey of the programs for socialized medicine so far proposed, pharmacy is conspicuous by its omission. This is particularly true in the case of the report of Miss Josephine Roche transmitted to the President of the United States under the title of "A National Health Program and Some Proposals Towards Its Design" as reported in the Journal of the American Medical Association for Feb. 26, 1938. In this report mention is made of the auxiliary services of the dentist, the nurse and the hospital, but no place is assigned for the pharmacies. By assumption, pharmacy might be included under pharmacology or therapeutics, but previous experience illustrates the need for a definite position.

This oversight must be corrected at once with due regard to the proper viewpoint, being neither boastful nor abnegating of our proper relationship to the entire program. Thus the first step is to insure that pharmacy is assigned its proper place in any system of socialized medicine that may be devised.

At the present time the entire proposition of socialized medicine is in a nebulous state fostered largely by a small group of persons interested in its social welfare aspects. The idea has been debated without much understanding. It

is interesting to note that wherever a study of the subject has been made, references are made to the systems in use in Germany and England with the statement that such parts as are adaptable to the American temperament should be employed in setting up our own system. But outside of these tentative statements no serious plan has been proposed to date.

At this stage it is interesting to note that in one discussion of the problem, "The Doctor's Bill" by Hugh Cabot (Columbia University Press, 1935) it is pointed out that only through a federal law will a workable plan result. Experiences of the various state compensation laws have shown the need for uniformity in such a thing, and the experience of the Federal Food and Drugs Act is an excellent example of what can be done.

For this reason, the second point to be made is the need for adequate participation in the pharmaceutical field in the formulating of the federal program and the enactment of a federal law. In any event pharmacy must make its position known and with force sufficient to insure securing its objectives.

What constructive steps can be taken at this time?

1. Through this conference and conferences of like nature a program generally acceptable to the pharmaceutical profession can be reached. With the program best suited to our viewpoint, efforts can be made to insure its inclusion in the final set-up.
2. Methods of coordination of efforts with the other auxiliary groups must be formulated; it is very important to the success of the entire program that all units be coordinated to the best advantage.
3. Since, as outlined at the National Health Conference held in Washington, July 18-20, 1938, a period of ten years or more will be necessary for the establishment of such an undertaking, it is recommended that such steps as are now taken shall be in the nature of a flexible program. This is important so as not to bind any committee that may be chosen to a hard inflexible plan when it is very likely that many modifications will be made in the setting up of this program.

Whatever the plan, there is need for keeping the pharmaceutical group informed as to what is being done. We

are all aware of the space being given in the daily press to the discussion of this matter. Tinged with political bias at times, it is difficult to pick out the facts. For this reason, it is very important that the group charged with pharmaceutical legislation be very careful to present the facts without prejudice.

Socialized Medicine and Public Health

LEONARD J. PICCOLI
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Dr. Piccoli could not be present but sent an outline of his paper. Dean Serles presented the outline with comments as follows:— Dr. Piccoli divided his report into two phases: A listing of those agencies which have given a definite stimulus to the thought of developing a socialized approach to the question of public health.

His first item is that of the preschool clinic, which of course each of you have known about for some time, an activity which has been going on in your community, generally fostered by lay organizations—the Parent-Teachers Association, various groups of the American Legion, various public health societies which, for the most part, have been made up of laymen.

The next important item is the student health department of our colleges and universities.

The next item he mentions is group health insurance and, as a subhead, workman's compensation.

His next topic is the industrial-medical benefits which have been established for many, many years. The most recent, of course, is the widespread endeavor in the development of hospital insurance.

In our direct relation to federal control, you are of course all familiar with the original program of the FERA, which has been recently transformed into the Farmers' Aid Corporation, the program of which has been established by the federal government in every state in which they have various branches of agricultural relief, and probably in certain areas where there are other forms of care for the indigent.

These organizations—if they may be called such—are what he has listed as giving a definite stimulus to the thought of some phase of socialized public health procedure. He lists as accomplishments of endeavors of similar character the progress in the control of tuberculosis, of yellow fever, of smallpox, and the present attempted program for the control of syphilis. He lists as an added incentive to the lay support of these programs the published reports on the costs of medical care.

I should like to inject a few personal observations. In every community where the preschool clinic has been established, you are familiar with the fact that some civic organization has enlisted the free-will services of the physician, the dentist, and the nurse, and has even gone farther and drawn upon state agencies for the supply of diagnostic reagents and, even further, the obtaining of some medicinal substances under the guise of their being an absolute necessity, based on the same level as food and shelter.

If any of you have followed the preschool clinic, you must have, if you thought carefully, arrived at the conclusion that if these clinics are conducted year after year the same group of children are being surveyed. From my own personal knowledge, very few instances are recorded wherein the recommendations of physicians or dentists have been followed out, unless there developed a dire emergency. In a small community of my own personal knowledge, the dental report showed that out of 300 children surveyed one year, the same 300 were surveyed the next year and only four had ever visited a dentist's office.

We have no definite knowledge of the effect of providing adequate food and shelter for this vast one-third of our population to which reference has so frequently been made. I believe any thinking individual will readily admit that the health of the individual is directly dependent upon food and shelter, and that no matter what type of medical service may be provided we cannot restore the healthful condition of an individual who has been undernourished and underclothed. It is about as logical as to try to use or restore a Model T Ford to do the work of the Lincoln Zephyr.

I would also call your attention to the system of health insurance existent in England since 1911. A statement in a medical journal of April 30, 1938 reads "The number of days

lost by the insured now reaches fourteen days per person annually, as compared with less than ten days shown by the available statistics in the United States."

The English Minister of Health, Sir Kingsley Wood, in this same report, states that English people have become a nation of patent medicine drinkers.

You will also recall that considerable consternation was developed in the English parliament when the exact findings concerning the cost of a panel system of medicine was actually known to the lay people, and still further consternation was developed when they found that actually there was more sickness in the population of England after the insurance had been developed than prior thereto.

Another very definite point is to be found in the reports concerning the English health insurance, and that is the report of the Society of English Pathologists, in which they deplore the fact that the pathology of disease, as known by the panel physician today, is almost nil, indicating that it is because of the fact that since they are required to make an average of thirty-six calls per day, they have no opportunity whatever to study pathology.

I am sorry I cannot bring to a logical conclusion the facts as Dr. Piccoli would have presented them to you, but I did feel that the important points of his outline, especially since public health is one of the important points in this program, should be referred for your serious consideration.

ABSTRACT OF DISCUSSION

Charles B. Jordan, Purdue:—We do not have a pharmaceutical organization in the United States with a sufficient membership to speak exclusively for pharmacy in a way that it can be heard and felt by our government. The National Association of Retail Druggists is a large organization, and yet there are a great many pharmacists who do not belong. The same is true of the American Pharmaceutical Association. I wonder whether pharmacy would be wise to plunge at this time, into the argument that is going on. I am quite sure some of the other professions would be glad to back out a bit just at the present time.

I do have this thought, however, that the other professions are now ready to cooperate. There was a time when it was very difficult to get cooperation from some of them. When the report on the Costs of Medical Care came out, we were a bit disturbed about it. We discussed it with representatives of the other professions and the attitude of most of them was, "We can take care of ourselves."

That attitude has entirely changed. They do not feel that they can take care of themselves.

I think any leadership will be acceptable that will bring the health groups together, not only for legislation, but many other purposes.

If health legislation is to be passed in our state governments, I think it logical that all health professions should have a strong hand in preparing such legislation, for the reason that they understand the problem better than those who are not members of the professions. I think there is an opportunity of getting these health groups together for that purpose.

I have one other thought. If it is possible to decentralize this effort, we are going to get proper medical care at less expense than if we continue to centralize it. I know that is directly opposite to the opinions expressed by a great many physicians and the position taken by Miss Roche in her report. I believe it is logical that the health groups in my country, or any other division, understand the health problem in that division better than they do in Washington, because the health problem in that division is not identical with the health problem in some other division. The indigent are being cared for; the man who can pay for his medical service is being cared for; but the one in the lower salary bracket who still has a little pride is suffering. A local group can understand that problem and handle it better than it can be handled from a central location, where differences in the problems are not understood.

Dean Jordan then told of the technique employed to obtain cooperation between the professions in Indiana through the organization of the Indiana Inter-Professional Health Council, and Dean Serles outlined similar activities on the part of the professions in South Dakota. These plans as well as similar ones inaugurated in many other states have been given much publicity in t[illegible] and other journals and are familiar to our readers and do not need to be discussed.

Robert P. Fischelis, Trenton:—I had the privilege of sitting as a member of the National Health Conference in Washington last month for three days and I think we are unnecessarily alarmed about some things. Ordinarily, when pharmacy is not mentioned in some proposal in which other professions have a part, we have a very good reason to object, but I think in this particular case we should not be unduly worried about not having been mentioned.

Let us go back to the surveys of the Committee on Costs of Medical Care, which have been alluded to here tonight. It was found that the total bill for medicines of all kinds for the people of the United States for a year was 715 millions of dollars, which means a little less than $6 for every man, woman and child in the United States, or approximately $24 per family, as families are figured in the usual statistics.

The reason pharmacy has not been mentioned particularly is because those who have considered this problem have not considered that the expenditure for medicines is of a magnitude which will cripple a family, or which will affect the care from that point of view which the ordinary family receives. This one-third that we have heard about that is improperly clothed and fed and housed represents a group that has an income per family of $800 or less per year,

and even with as small an income as that, it does not seem that the amount of $24 for medical supplies, that is, drugs and medicines, is a very large expenditure. I think that is at the bottom of the fact that we have not been considered as a factor in the cost of this problem.

As I gathered the trend of things in the conference, I came to the conclusion that there was absolutely no refutation of the data that had been presented by the government statisticians as to the lack of adequate medical care for large groups of our population. In fact, the specific question was asked whether any one of the medical group was prepared to challenge those figures, and no one did challenge them.

The first part of the conference was devoted to a presentation of the factual data. The second portion of the conference was devoted to methods of supplying the lack of medical care, and this program of 850 million dollars a year to be expended for various types of preventive and curative services did not include medicines particularly, because it was largely a public health program, one of the type in which drugs play a minor part.

It seems to me that for us to take a lead in anything in the way of legislation activity, or even in attempting to focus the attention of the public on it, would be a grave error at this time.

I think Dean Jordan's proposal and his suggestions here tonight are very much in order. What this is going to narrow down to is a question of method. I do not think anybody who has studied the subject can escape the conclusion that government health services are going to be increased, and that this government is going to see that its citizens have health care, just as much as they are having education and other services.

If we recognize that fact, then we have to follow with the conclusion that there is going to be a way of complying with it.

The method of distribution of medical service today is what is under attack, and the difference between the medical profession and those who are advocating a better distribution of medical care is simply one of method. The medical profession feels that the orthodox method should prevail, whereas others who have studied the subject feel that perhaps improved methods—at least from their standpoint—should be found for providing a more adequate distribution.

I think eventually the real fight the medical profession will have to make will be to establish a system of free choice of physician, under whatever system of medical care may be provided. If the medical profession is successful in establishing that principle, then I think we as pharmacists are going to be dealt with on the same principle, that is, the free choice of pharmacists.

Therefore, it seems to me it behooves us to do as Dean Jordan has said, cooperate with the other professions, particularly the medical profession which is, of course, the central figure in any system of medical care, and to assist as far as possible, if we think that is the right thing to do, in gaining for them free choice, and it will naturally follow that we will remain in the position of being able to supply the services as the people who get the service want it supplied.

The other important conclusion that I think can be drawn from the discussions at that conference is this:—that neither the medical

professions nor pharmacy, nor any other profession involved in giving these services, is going to decide this question. We are going to have a voice in perhaps modifying the method, but the decision is going to be made by the people.

Who were the delegates to this conference? The predominating numbers were representatives of labor, farm groups, industrial workers, and some industrial people who are employers. But the larger delegations were made up of groups representing consumers of medical services.

The official answer of the medical profession at this conference to some solution of the problem was that there are more pressing problems than this one of medical care to be decided; for instance, that of providing food, clothing, shelter, and a job. But this conference was called particularly to consider the question of providing adequate medical care and distributing it properly. Other groups are attending to the other factors. It is the same type of conference which is being called to study and to put pressure upon Congress to formulate some type of legislation to provide these things that are lacking.

Flexible Curricula In Colleges of Pharmacy[1]

CHARLES H. ROGERS
College of Pharmacy, University of Minnesota

From surveys made from time to time, we learn that between sixty-five and eighty per cent of the graduates of colleges or schools of pharmacy enter retail pharmacies or drug stores. After making allowance for those who, after graduation, never engage in any pharmaceutical pursuit, we find between fifteen and twenty per cent of our graduates occupying a rather large variety of other positions, in which, a thorough pharmaceutical training is almost indispensable for success. For nearly thirty years the Pharmaceutical Syllabus has recommended curricula which have served as rational bases of instruction because they presented subjects essential to a sound college curriculum and outlined professional and applied course material in such a way that, without inhibiting individuality, greater curricular uniformity and balance could be attained. The Syllabus committees have labored long and industriously to reconcile many points of view, to solve innumerable unanticipated problems, and to formulate curricula that were educationally sound. Based upon past performances

[1]Written especially for publication in this Journal at the request of the Editor.

of these committees, pharmaceutical educators are confident that when the fifth edition of the Syllabus is published it will provide a very sound basis upon which to formulate the instruction of those students who anticipate practicing in retail pharmacies or drug stores. Granting that certain fundamental courses in pharmacy, chemistry, and pharmacognosy must be required of all students who expect to graduate with a Bachelor of Science in Pharmacy degree, would it be possible to have the remainder of the curriculum so flexible that the fifteen or twenty per cent of the students who do not intend to engage in general practice, can be better trained for their special positions? Unquestionably the modern trend in all education is to abandon rigid and fixed curricula for those having sufficient flexibility to permit of instruction in line with the individual student's anticipated needs. If a curriculum is to be a flexible one, it must permit of students selecting courses from an approved list of both academic and professional electives. In a four-year curriculum having the Syllabus minimum of three thousand clock hours, the sum of an augend that is composed of the number of clock hours devoted to *required* (Syllabus) professional, applied, and basic subjects, and an addend consisting of the number of clock hours of *optional* professional, applied and basic subjects that are usually designated as required subjects in such a curriculum, is so large that there remains only a very few hours available for academic and professional electives. It may be said, however, that in most curricula the total number of clock hours exceeds the three thousand minimum by three or four hundred, thereby permitting the inclusion of a limited number of both academic and professional electives. As an example: The curriculum of one college of pharmacy shows a total of 3391 clock hours. Of these, 272 clock hours are available for academic (first year) electives and 154 clock hours for professional electives (fourth year). The term "academic" is used here not only to designate those elective courses of, or pertaining to literary, classical or liberal studies that are distinct from professional technical electives, but also to differentiate between professional *pharmaceutical* and non-pharmaceutical courses. Thus, physics or zoology, even though technical, are designated as academic electives whereas pharmaceutical technology and pharmaco-histology are classified as professional electives. In this curriculum the num-

ber of clock hours available for academic and professional electives constitutes approximately twelve and one-half per cent of the total number of clock hours devoted to instruction in all subjects. This is believed to be reasonably adequate for giving a desirable degree of flexibility to this four-year curriculum. There is no question but that when economic and professional conditions are such that a minimum five or six-year curriculum is indicated, the percentage of time available for academic and professional electives should be increased so that a greater degree of preparation for special positions in the pharmaceutical field, may be obtained, together with any desired cultural courses.

The substitution of more flexible curricula for rigid and fixed ones will be justified when it is proved that by so doing, graduates are better prepared for their particular chosen fields. In the consideration of such curricular changes, the question arises as to how many students, upon entering a college or school of pharmacy, know, with any degree of certainty, what type of pharmaceutical work they want to do after they graduate. In order to determine this fact, every student who had met the entrance requirements of both high school units and college aptitude rating, and had made application to enter the College of Pharmacy of the University of Minnesota during the past three academic years, was interviewed and interrogated on this point with the following results:

1. Approximately eighty per cent of entering students wanted training that would fit them to practice pharmacy in a retail pharmacy or drug store. Over seventy-five per cent of this group were sons, daughters, or relatives of pharmacists in practice.

2. About fifteen per cent expressed a desire for training that would qualify them for positions in manufacturing, analytical, biological, or research laboratories.

3. About four per cent (all girls) wanted training for positions as hospital pharmacists.

4. Less than one per cent did not have any particular line of pharmaceutical work in mind. They evinced an interest in and a marked predilection for pharmacy in general.

It will be noted that the students referred to above were those who had met the entrance requirements and whose applications for entrance to the College of Pharmacy were ac-

cepted. It has been estimated that annually about thirty-five additional high school graduates have made application for entrance to the College of Pharmacy but because they did not meet the entrance requirements or because their college aptitude ratings were below those required by the College of Pharmacy for entrance, they were assigned to some other department or college of the University by the Board of Admissions. These applicants were not interviewed because their cases were disposed of by the Registrar's Office and hence never reached Pharmacy.

Sufficient time has not elapsed to determine how many of the interrogated students previously referred to will actually follow the particular pharmaceutic work that they anticipated doing at the time of entering the college. Unquestionably some students will change their minds at some time during the four years in school. Also a few who anticipated being general practitioners will accept positions in laboratories, as representatives of pharmaceutical manufacturers, etc., whereas a few others who anticipated following the more technical pharmaceutical lines, will enter the retail pharmacies or drug stores. A survey of an acceptable sample of graduates of our college prior to 1936 shows that approximately 80 per cent are now engaged in retail pharmacy and that of this number well over 95 per cent anticipated doing this type of work when they came to the University for their training. Of the graduates prior to 1936 who are now engaged in pharmaceutical work other than retail pharmacy, less than 50 per cent anticipated their present careers at the time of entering school. By and large, it is my opinion that over 50 per cent of this group has been recruited from those students who didn't know specifically at the time of entering college what they wanted to do after graduation. It is also questionable if they knew what they really wanted to do at the time of graduation. But one conclusion can be made and that is that that group composed of entering students who do not have more than a general conception of what they want to do in life, is rapidly growing fewer in number. This may be accounted for, in part, by the emphasis that is being put upon vocational guidance in our secondary schools and also by the dissemination of literature in which high school students are informed about the opportunities in different occupations, professional and otherwise. (Guidance Leaflets: Issued by the Office of Education, U. S. Department of Interior, etc.)

It is obvious that before an advisor to an entering student can intelligently recommend the selection of academic electives, he must have a rather good idea as to what the student intends and wants to do after graduation. Our experiences lead us to believe that this information can be obtained by means of interviews. It was surprising and also gratifying to learn that nearly all of the students entering pharmacy had pretty well-conceived ideas about their life's work. Once having determined what a student's ambition is, the intelligent recommending of logical electives becomes the advisor's next task. "Logical" electives may be considered to be those elective courses which the advisor believes will be *especially* helpful in preparing a student to function the most efficiently in his anticipated field of endeavor. Certainly, the electives selected for a student who wants to practice pharmacy in a retail pharmacy or drug store, as we conceive it should be practiced, should be different from those recommended for the student who anticipates getting a position in an analytical, manufacturing, or research laboratory.

For the student who anticipates being a general pharmaceutical practitioner, the academic electives of the first year might include combinations of psychology, political science, speech, zoology, and other courses that are specifically intended to make the student more conversant with and give him a taste for the fine arts, the humanities, and the broader aspects of science. Unfortunately the large number of required subjects in a four-year curriculum, together with courses that are clearly indicated to give the individual student training more specific to his anticipated needs, does not permit of more intellectual and aesthetic training by virtue of which he could acquire enlightenment and refinement of taste. Regardless of how much pharmaceutical educators may deplore this fact, it is my opinion that in educating a student so that he may give a high grade of pharmaceutical service to the physician and the public, preference must be given to subjects that have practical rather than aesthetic value. Certainly courses in psychology, speech, political science, sociology, economics, zoology, and the like, will better prepare students to efficiently discharge their duties as general pharmaceutical practitioners than courses in Greek, fine arts appreciation, prose and poetry of the 17th century, nineteenth century philosophy, etc. In brief, our present educational problem is largely one of specific professional implementation.

For the student who expects to fill a position in a manufacturing or analytical laboratory, or who desires to pursue graduate study, the academic electives of the first year that would be indicated are courses in mathematics, physics, modern foreign language, and others that would build up the necessary background for real technical work and scientific research. The courses that obviously contribute to anticipated needs in this group may be broken down still further. For example: it would be of great advantage to the student who intends to manufacture pharmaceuticals and chemicals for distribution to have courses in production management, survey of marketing, labor problems and trade unionisms, banking and investment, etc. Some of these courses would necessarily have to be taken during some year or years other than the first one. That is merely a matter of adjustment of the individual's class schedule.

Having pointed out the advantages of academic electives in the first year of a flexible curriculum, let us consider whether there are any advantages in having flexibility in the senior year of a four-year course. We must not lose sight of the fact that by having flexibility in a pharmaceutical curriculum, it will be possible to emphasize that training which will best prepare a student to function the most efficiently in whatever field of pharmacy he anticipates entering after graduation. With this objective in mind, some professional electives should be available to the student in his senior year. It is very desirable, although not absolutely necessary, that the selection of these professional electives should be in logical sequence and consistent with his choice of first-year academic electives. The student who has been prepared to enter the retail field would profit by a course in industrial manufacturing pharmacy; the one who contemplates a position in an analytical laboratory could take advantage of a course in food and drug analysis; the student who has shown especial interest and aptitude in pharmaceutical botany would naturally turn to advanced pharmacognosy and pharmaco-histology; the student who was especially interested in biological products would enjoy and benefit by a course in biological assay of drugs, etc. Students who choose these professional electives should be impressed with the fact that upon their completion they must not consider themselves to be experts or specialists in the respective fields. It is educationally impossible to produce a specialist or an expert in four years in the pharmaceutical or any other

profession. However it is possible to emphasize by elective courses certain phases of undergraduate training. If these phases are in line with the anticipated needs of the individual student, then emphasis can be acquired only by means of curricular flexibility.

From what has been said, it must not be assumed that I am unsympathetic with the offering of those cultural courses which will give a student a greater appreciation of the finer things in life. However, the fact still remains that until economic, professional, and social changes justify extending the minimum educational requirement for a degree in pharmacy, it will be difficult if not impossible to *systematically* provide for the acquisition of "culture" through course offerings. In this regard pharmaceutical educators have long realized that they are between the devil and the deep blue sea, i.e., the absolute necessity of thorough and sound professional training on the one hand and only four years in which to do it, on the other. My observations have lead me to believe that the paucity of time for intellectual and aesthetic training has been compensated in part by; 1) the personal contacts with and classroom presentations to students by the faculties of our colleges of pharmacy; and 2) by the students being exposed for four years to the cultural atmosphere that is evidenced in and around great educational institutions. No one will deny that after four years of training our students leave us not only with professional and scientific knowledge but also with a noticeable refinement of taste. It is generally appreciated that no curriculum in pharmacy could ever be devised which would provide *systematic* training sufficient to satisfy all of the professional and cultural qualifications set up for a pharmacist. However, I believe that by means of more flexible curricula, there is greater opportunity to give students a sound professional training in line with their anticipated needs and also not entirely neglect the cultural aspects of their college educations.

Commercial Aspects of Professional Pharmacy[1]

FREDERICK D. LASCOFF
Columbia University College of Pharmacy

Far back in the year 1776 while the War of Independence was being fought and the fate of this great nation was being decided, one of the greatest economists of all times, Adam Smith, was writing his "Wealth of Nations" and said something which it might be well for all of us to consider, even in this advanced twentieth century. I quote Adam Smith:

"Apothecaries' profit is become a by-word, denoting something uncommonly extravagant. This great apparent profit, however, is frequently no more than the reasonable wages of labour. The skill of an apothecary is a much nicer and more delicate matter than that of any artificer whatever; and the trust which is reposed in him is of much greater importance. . . . His reward therefore ought to be suitable to his skill and his trust, and it arises generally from the price at which he sells his drugs. But the whole of the drugs which the best employed apothecary, in a large market town, will sell in a year, may not perhaps cost him above thirty or forty pounds. Though he should sell them, therefore, for three or four hundred, or at a thousand percent profit, this may frequently be no more than the reasonable wages of his labour charged, in the only way in which he can charge them, upon the price of his drugs. The greater part of the apparent profit is real wages disguised in the garb of profit."

You may say "We know all of that"—and undoubtedly we do—but unfortunately we do not stress it sufficiently to our students in order to arm them with the proper defenses when entering the business world.

And though there is, fortunately, a growing tendency toward professional pharmacy, the young man entering the practice of pharmacy is confronted with many serious commercial problems. And one of the most difficult ones is the problem of convincing the physician and the public as to the fairness of what Adam Smith rightfully referred to as "apothecaries' profit". The increasing number of sponsored "consumer groups", the advent of department store prescription departments, and the cries about the "cost of medi-

[1]Read before the Conference of Teachers of Pharmaceutical Economics at the 1938 meeting at Minneapolis.

cal care" make the average pharmacist seem like Jesse James without a gun. And in most cases pharmacists are unable to intelligently answer these critics.

If we as teachers can make the pharmacist himself realize his value to the community, we will have made a great stride in the right direction. Battered about for years by vicious competition, by his landlord, and by the public, the pharmacist has, to a great extent, become a "Casper Milquetoast", afraid of his own shadow, and as a result often does not conduct his (shall I say "business"?) as a business should be conducted, that is, in a sound business-like manner. This is due partially to the fact that he is afraid and partially to the fact that some of his teachers have spoken more about "the glory of pharmacy" than about sound economics as applied ethically in the profession of pharmacy—and I use the word "ethically" in its true sense, meaning "honestly".

Obviously, one can write pages on this subject. I shall, however, limit myself to some of the more important commercial phases which I feel confront the professional pharmacist. Let us analyze some of these problems. I will not try to define a professional pharmacy. Suffice it to say that obviously it is one where the prescription department and allied departments play the major role and the only sidelines which are carried are those which relate to matters of public health. Naturally, this limits the amount of income because toys, radios, etc., as well as soda fountains and luncheonettes must be eliminated. Since this is a considerable source of profit in many stores, the professional pharmacist is confronted with meeting his overhead by limiting himself to the restricted department mentioned above.

The professional pharmacist is faced with that same first problem which all retailers face—choice of the proper location. Naturally, he must seek a location in either an area thickly populated with physicians or other professional men who are a fertile field, and may be educated to appreciate professional pharmacy, or else in an area of so-called better class residential sections whose population can also be educated to appreciate the value of the professional pharmacist to their community. It is difficult to point out a perfect location but the above mentioned factors must be stressed. It is important to measure the consumer demand for a professional pharmacy, or we might say, measure the consumer appreciation of a professional pharmacy and the student must be

impressed with this fact. He is sometimes completely blinded by the inspiration given to him by his professors on the glory of professional pharmacy and feels that he should be a crusader in a district and open a professional pharmacy. But he must be made to realize before opening a professional pharmacy that a pharmacist—to put it very plainly—must eat. And so, extreme caution in choice of location is absolutely necessary.

Though a conservative estimate of drug store rental is 4 per cent of sales, it is generally conceded that a professional pharmacy may pay 6 per cent in rental because of the wider margin of profit on prescriptions, providing there is a possibility of building a great volume of prescription business. The question of salaries is another one to be carefully considered. Here I want to stress something that may sound strange on the surface. The professional pharmacist must be taught not to economize on salaries in the ordinary sense. Since he expects to get the best type of man, he must pay him not only the necessary wage but should do whatever he can to encourage him and thereby really get the best that is in him. This brings up another point. One of the old habits of pharmacists, and a stupid, but nevertheless existing fault, is forgetting to set a value for their own time. It is of great importance for the pharmacist to set a measure of value for his personal services and to realize that his time has value in whatever act he performs. If he makes up a solution the cost of which, in material, is negligible but which takes considerable time, let him realize that if he gives this away to a physician the cost of his time must be charged to advertising or else it must be considered a total loss. There is a tendency for pharmacists, particularly professional pharmacists, to forget this very important factor in figuring overhead costs.

Advertising is another commercial problem which the professional pharmacist must not overlook. Whether the advertising is by personal contact, direct by mail, window display, etc., the student must realize its importance. In a professional pharmacy, "Pharmacy Week" should be celebrated 52 weeks of the year with at least one professional window display in the windows at all times. If he has only one window available, part of this should be used at all times for professional display.

It has been said by experts that many of the failures in this country have been due not so much to lack of selling ability as to lack of buying ability. Of course, the profession-

al pharmacist is confronted with a problem which causes much economic waste. A condition has been created which in my opinion, is going to be the greatest single contribution by the manufacturers toward socialized medicine. That problem is the unnecessary duplication of inventory. In examining our prescription department, we found that we carry 87 different brands and strengths of digitalis, not counting different sized packages of the same brand. We carry 111 different brands and strengths of barbituric acid derivatives. The number of brands of any one item which a pharmacy is forced to stock is limited solely by the variety which exists in the prescribing preferences of the physician whose patients he serves. How can the pharmacist meet this problem? He must fill physicians' orders exactly as they are written, but he can legitimately show the physician for example that if he makes up a 3 per cent ephedrine solution by the pint it costs him approximately 15 cents per ounce including the bottle, labor, etc., whereas, if he has to invest in 1 ounce bottles of 16 different manufacturers, the cost to him per ounce is approximately 51 cents. Obviously, this can be done only with a limited number of preparations but wherever it is done it will not only eliminate economic waste for the pharmacist, but make a consequent decrease in the cost of medication to the consumer.

One of the most difficult problems in buying, particularly for a prescription department, is to accomplish the perfect situation of 12 turnovers a year throughout the entire inventory. Very often a physician orders 2 ounces of a certain product. This product is made only in pint containers. The physician never orders it again. Result; (and it frequently happens) the druggist has invested money in the 14 remaining ounces of that product which he cannot recover in any possible way. Again, his overhead rises. These problems together with the all important factor of freshness are worthy of careful consideration. Often it is better to buy in small quantities and pay higher prices, thereby also maintaining a reputation for freshness in drugs.

These are but a few of the commercial problems which affect the professional pharmacist. We must not bend over so far backwards in our desire to "bring back professional pharmacy" that we forget all about the business problems involved. It is important for the student to know the formulas of the United States Pharmacopoeia, the National Formulary and the Recipe Book, but it is equally important for him, in

order to conduct his pharmacy on a sound business basis, to understand the formula for preparing and analyzing a statement of assets and liabilities and a statement of profit and loss. The writer hopes the result will not be as described in a recent issue of the magazine, The New Yorker. They told the story of a pharmacy which gave up its prescription department and its stock of proprietaries, and conducted what was purely and simply a soda fountain and lunch counter. If you will consider the operation of the kind of drug store which does a large luncheon business in the noon hours, but keeps open 12 to 16 hours a day for a few prescriptions and drug sales, you will see that the writer was not so far wrong from a purely economic standpoint. This "pharmacist" could remove the costly prescription department, and probably serve one-third more people at luncheon. He got away from the high expense and frequent heavy losses of the prescription department and heavy duplicate medicine stock. He cut payroll, for he no longer had to have registered pharmacists on duty 16 hours a day. He increased turnover and average profit per sale.

Naturally, it ceased to be a pharmacy, because it could make more money as a retailer of foods and soft drinks than in the combination role of professional man and merchant which the druggist unavoidably plays.

This example shows one extreme. I can cite numerous examples of successful professional pharmacies, their success being due not only to their superior professional skill, but to a combination of this skill and a complete understanding of sound economic principles. It is our duty to stress the importance of this to the body of "The Pharmacists of Tomorrow".

DISCUSSION

Mr. Hjalmar O. Tiegen, Moorhead, Minnesota.—I am not a teacher of pharmacy. I am a retail druggist. I conduct a retail pharmacy. I am especially interested in the reception which should be accorded the graduate in pharmacy when he enters a retail store. I wonder if we do not expect too much of a graduate just out of school. It is hardly fair to expect him to step into a store and be a wizard as far as the principles of pharmacy are concerned and also to have the knowledge to make a sales talk on any item in that store. I do believe that the man after four years of training in a college of pharmacy, has the fundamental knowledge on which to base good salesmanship far in advance of the person who has committed to memory a sales talk given him by a commercial house. I do not think the average proprietor takes the time to hold sales

conferences in order to help the young man. The same is true of the professional work in the pharmacy. Even though the store has a good prescription business, it is frequently without adequate facilities for practicing pharmacy. There will be a few mortars and a few ordinary pharmaceutical implements, but often you cannot find scales that will weigh down to two milligrams. One of the necessities of professional pharmacy today is to educate the proprietor of the store to install apparatus and create an environment which will help to foster and bring out the professional knowledge and professional attitude that has been instilled into the young man during his four years of college training. I think another primary need for professional pharmacy is a source of adequate information. Recently, when one of our physicians requested information about a preparation written and used by Dr. Sanford Gifford, it took six weeks correspondence with an eastern magazine to obtain it. If we had clearing houses in different sections of the country where information from different magazines was obtainable, I believe it would be a great stimulus towards the increase of professional work in the professional pharmacy.

The Method of Laboratory Work In Pharmacology[1]

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There has been a great increase of interest in the subject of pharmacology on the part of pharmacists and colleges of pharmacy within the past few years and that interest has been particularly keen in reference to the laboratory course. A great many questions have been brought up as to just how much laboratory work should be done as well as the nature and character of it. There are many problems which confront colleges of pharmacy and present obstacles which determine to some extent the nature of the courses given.

Pharmacology has been taught in medical schools for years and there seems to be some resentment on the part of medical schools toward the teaching of pharmacology in colleges of pharmacy. However, I do not think that there should be any feeling of that kind because it seems to me that the objectives and the purposes of teaching pharmacology in a college of pharmacy are entirely different from those in a college of medicine.

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[1]Read before the Conference of Teachers of Pharmacognosy and Pharmacology, 1938, Minneapolis meeting.

In the colleges of pharmacy, pharmacology should be taught entirely from the point of view of dispensing. That, of course, is the primary function of the pharmacist, and consequently the applications of pharmacology to dispensing should be emphasized. In the medical schools, pharmacology is taught primarily from the standpoint of therapeutics. One of the objections that the medical colleges have to colleges of pharmacy teaching pharmacology is that they feel there is a possibility that the pharmacist may encroach on the field of the physician by attempting to practice therapeutics. However, it seems to me that if the student of pharmacy has a good working knowledge of pharmacology he will be less inclined to prescribe or attempt to practice the therapeutic aspects of pharmacology than the pharmacist who has no knowledge of the action of drugs and thus no knowledge of the dangers and limitations of their use.

The pharmacist is legally responsible for dosage and, hence, he must know not only the average dose but the minimum and maximum doses as well. He must have a knowledge of synergism and antagonism. In the case of mixtures of certain drugs, he must know whether the resultant effect due to synergism or antagonism is arithmetically additive or subtractive or otherwise. With reference to changes of drugs in the system, he should know whether resultant compounds are more or less toxic than the original form so that he may avoid dispensing overdoses. Hence, while the pharmacist should have a knowledge of therapeutic range and therapeutic limitations of dosage, he is concerned primarily from the standpoint of application of this knowledge to dispensing.

The above considerations should have, and do have, considerable bearing upon the nature of the laboratory work. In the medical schools the laboratory work in pharmacology is concerned to quite an extent with mechanics and techniques. The pharmacist is not much concerned with mechanics and techniques, and, therefore, in laboratory work very little attention need be devoted to the mechanics and techniques of application or administration of drugs. Therefore, the demonstration could be employed to a large extent, and should be employed to a large extent for several reasons. In the first place, when the demonstration is utilized, the student's attention may be directed and concentrated on the manner of action of the drug. If the student performs the experiment himself, his attention is likely to be on the technique and

manipulation of the instruments or the handling of the animal. It appears, therefore, that the student will, in many cases, get much more out of the demonstration than he does out of the laboratory experiment, and consequently in our laboratory work we are using the demonstration to a large extent.

Second, this is an important consideration insofar as equipment is concerned. For the laboratory experiment which is performed by all the students, enough equipment is required to supply all the students, whereas for the demonstration, equipment can be limited to the amount necessary for carrying on the demonstration. Equipment includes animals and various other items which may be necessary, such as desks and furniture in the laboratory. Hence, this is of importance in reference to cost of operating and maintaining a course in pharmacology.

Third, the demonstration permits more effective use of time. By means of the demonstration more ground can be covered than by students performing experiments individually or in groups. Hence, it is possible to demonstrate the action of a larger number of drugs and students will get a broader and more extensive knowledge of the action of drugs than they will through the use of the laboratory experiment.

However, there should be some experiments carried out individually by the students. The types of experiments which can be performed to advantage and should, therefore, be included fall under two heads, namely, first aid and biological assay. The pharmacist is called upon to render first aid and consequently many first aid methods, devices and practices may be taught in the pharmacology laboratory. Students may use other students as the subjects for the experiments. Again, the pharmacist is concerned with drug assays. Hence, he should have some knowledge of the methods and procedures of biological assay. Therefore, some of the biological assays should be carried out as experiments in the laboratory.

Finally, there may be some group experiments which may be utilized to good advantage. For this purpose the students may be arranged in groups of three or four and each member assigned definite duties, such as anesthetist, surgeon, supply clerk and recorder. These may be rotated so as to give all members of the group practice and experience in all aspects of experimental procedure.

The use of the library may be encouraged by requiring students to write up demonstrations and experiments and dis-

cuss and explain the various points of emphasis. Such discussions and explanation should be based on library study and bibliographical references should be required as a part of the written report of the demonstration and experiment.

Visualization of Drug Action In Basic Training[1]

ARNO VIEHOEVER
Philadelphia College of Pharmacy and Science

A year ago, before your group, this author presented a plea for "Experimental Pharmacology as a Teaching Tool." Additional progress, made since then in our laboratory, further justifies, we feel, our emphasis on the dynamic, experimental method of teaching, replacing or at least supplementing the mere static didactical instruction.

For years we have endeavored to collect evidence of visible drug action, so that the mechanism of life could be observed by the student under normal conditions as well as under drug influence.

By the selection of transparent animals as daphnia and the prawn palaemonetes, causes and effects in life processes could be demonstrated and thus readily visualized. To these visible effects on invertebrates we have now added organ and tissue responses which can be visualized in the translucent "scaleless" varieties of the goldfish. Finally, we have added, among new methods and apparatus, one special unit to the instrumentarium of the successful inspirational teacher, namely, the stethographone, permitting the recording of both the visible and audible drug action.

I. BIOLOGICAL EVALUATION AND TOXICOLOGICAL RESEARCH

1. Studies with Daphnia (Trasparent Crustacean)

New methods have been devised, some of which are immediately applicable to the classroom and pharmacological laboratory. With these methods not only the rhythmic mechanism of life may be observed, but the action of drugs may be evaluated and the effect of poisons ascertained.

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[1]From the Gross Laboratory for Biological and Biochemical Research. Read before the Conference of Teachers of Pharmacognosy and Pharmacology at the 1938 Minneapolis meeting.

At least sixteen, distinct, physiologically active, groups have been studied; the detection of active substances in minute amounts has been worked out; and their quantitative evaluation either accomplished or attacked with promising results.

1. *Cathartics* (aloes, cascara, elaterin (reference standard), podophyllum, phenolphthalein, rhubarb, etc. (Additional results have been published this year in the Journal of the Association of Official Agricultural Chemists or will appear in the August Journal of the American Pharmaceutical Association); other workers have verified the usefulness of the method (Tinsley in J. Lab. Clin. Med.).

2. *Heart Tonics* (digitalis, veratrum, etc.). The protective properties of digitalis against heart depression by medications (yohimbine) have been observed; the findings suggest that a more logical, more useful and reliable method of standardization is possible.

The effect of veratrum on daphnia locomotion (excitation, followed by paralysis), may serve as a new basis for standardization. (Data are being prepared for publication.)

3. *Anesthetics* (chloroform, ether, alcohol, acetone, etc.). The mild as well as the toxic properties of these agents (key substances causing like animal reactions) can be readily observed according to the concentration and duration of contact. (0.1 per cent-0.2 per cent acetone aqueous solutions have been used as solvents because the anesthetic effect is only very slight. Data have been published in the February copy of Soap discussing results with a new organic insecticide (o-naphthyl isothiocyanate).)

4. *Respiratory Depressants* (nicotine, pilocarpine, etc.). The marked depressant effect of nicotine and recovery from it is very striking. Both effects can be readily demonstrated by oral administration or injection into the broodsac (blood stream).

5. *Aphrodisiacs* (yohimbine, cantharidin). The specific physiological effects were observed on the male daphnia (and published in the June number of the American Journal of Pharmacy.)

6. *Irritants* (croton oil, capsaicin, piperine). Data describing the comparative effects were published in the article just referred to.

7. *Hormones* (adrenaline, benzedrine and derivatives, qualitatively only). Special quantitative experiments are under way.

8. *Excitants* (strychnine, picrotoxine). Extensive data were previously published, disclosing strychnine as a key substance, affecting higher invertebrates as it does vertebrates with convulsion, followed by paralysis and death.

9. *Narcotics* (marihuana, morphine, canadine). The narcotic effect of cannabis, so easily observed in the locomographs, was described in the December American Journal of Pharmacy. Promising experiments with canadine, a synthetic morphine substitute, are under way.

10. *Hemolytic, Saponin-like substances* (glycyrrhizin). Some data have been collected, indicating the comparative nontoxicity of glycyrrhizin, a possible substitute for saccharin.

11. *Cyanogenetic Glucosides and products of hydrolysis* (amygdalin, hydroganic acid, benzaldehyde and ammonia). The biochemical effects have been published.

12. *Toxins* (snake and bacterial). Data have been collected indicating the suitability of daphnia as a test animal especially, for snake venoms and probably for certain bacterial toxins.

13. *Physiological Antidotes* (barbiturates, digitalis, antivenin). Experimental evidence is being collected, demonstrating the beneficial effects of these agents in counteracting the toxic effect of such potent drugs as strychnine, chloroform, and snake venoms.

14. *Insecticides* (rotenone, pyrethrum, isothiocyanate and knockdown agents). The mechanism of action of these products can readily be demonstrated. (Some results have been published in the February number of Soap.)

15. *Vital and Fluorescent Stains* (neutral red, eosin, etc.). The progressive absorption, retention, and excretion of vital and fluorescent stains in and from the various organs and especially the liver can be strikingly demonstrated in the ordinary and fluorescent microscopes.

16. *Vitamin E* (the fertility vitamin). The need for vitamin E in the reproductive processes of daphnia can be speedily and unmistakably shown in a few days. (Results are recorded in the July number of the American Journal of Pharmacy.)

2. STUDIES WITH FISH (TRANSLUCENT GOLDFISH)

The most recent work in progress is the study of cholagogues, as cholecystokinin, and mountain ash berries or their extracts used clinically in gall bladder afflictions. The use of translucent fish, such as Carnegiella stregata, as a test ani-

mal in these studies, appeared temporarily promising. Much more successful has been the use of the "scaleless" telescope and white goldfish (Carassius auratus), specially selected, responding to the specific gall bladder evacuant, cholecystokinin (as published in American Journal of Pharmacy (May).)

3. Studies with Warm-blooded Test Animals and Man

The heart and breathing systems of warm-blooded test animals as cats, guinea pigs, rats, dogs and man were recorded by means of the newly constructed apparatus, the *stethographone*. This instrument permits the amplification of the sound as well as the graphic recording of the heart and respiratory rates of intact warm-blooded animals of any size and presents an improved means of studying and standardizing the effects of drug stimulants and depressants by a non-toxic, non-surgical method. Already evidence has been collected proving that the physiology of the cold-blooded invertebrate (daphnia) is much like that of warm-blooded vertebrates or so-called higher animals.

It was also shown with this apparatus in our veratrum research that the toxicity of the preparations is not necessarily paralleled by corresponding depressant heart action. Thus, obviously, toxic substances exist aside from those which merely cause heart depression and thus probably also beneficially affect high blood pressure.

II. NEW APPARATUS AND TOOLS[2]

The work has led to the construction of ten original pieces of apparatus or tools for observation and recording of drug action, nine on transparent cold-blooded animals as Daphnia, and one on intact warm-blooded animals of practically any size, including man.

1. *Projectograph,* used for slit photography of organ functions.
2. *Photo-electrograph,* using the photo-electric cell + amplification of organ function.
3. *Tapograph* (modified Ingle apparatus), mechanical synchronization with heartbeat.
4. *Strobograph,* using the strobographic effect in connection with projection of heartbeat.
5. *Comparoscope,* for observations and recording of loco-

[2]To be described in detail with illustrations in a separate publication.

mographs (graphs depicting the normal and impaired locomotion).

6. *Micrulette,* for studies in quick succession of over 50 individual daphnia.

7. *Vie-tubes,* special flat observation tubes.

8. *Vie-chambers,* for individual projection and observation.

9. *Vie-cells,* for simultaneous projection and observation of 7 individual daphnia.

10. *Stethographone,* for visible and audible drug action on heart and breathing systems of warm-blooded animals.

III. SUMMARY

Our orientation and understanding of life and drug action is greatly enhanced by a close penetrative observation and interpretation of life itself, and much less by a perusal, however thorough, of a book or the hearing of a lecture, however brilliant. A wealth of data has been accumulated as a result of our experimental procedure with new test animals, new test methods and new tools.[3]

The simplicity and speed of visualizing the responses of especially selected living units to drug action (by means of these new forms of experimental attack) are often all but miraculous.

The wide applicability of these methods in the research laboratory, and particularly also in the basic teaching of pharmacology, will become immediately obvious upon actual use.

[3]The cooperation of Drs. Cohen and Tischler, Messrs. Sokoloff, Taransky, Quimba, Gilbert, Whiteley and Wellburn in the experimental work is herewith gratefully acknowledged.

The Nature of Laboratory Work In Pharmacology for Pharmacy Students[1]

J. M. DILLE

College of Pharmacy, University of Washington

One of the problems confronting those who teach phar-

[1]Read before the Conference of Teachers of Pharmacognosy and Pharmacology at the 1938 Minneapolis meeting.

macology to pharmacy students is the nature of the laboratory work. I believe that the time has now come when there is no longer any question concerning the need of pharmacology in the pharmacy curriculum nor the importance of laboratory experience to the student in this subject. As this work expands it becomes important that it be guided along the proper channels and therefore it appears extremely fitting that a part of this section be devoted to the problem of laboratory teaching in pharmacology.

We are primarily interested in the basic course in pharmacology which generally covers a period of one school year. This course is usually a required one and in more progressive schools may include student laboratory work, demonstrations or both. Courses which are to follow this basic course should receive attention just as specialized courses in other branches of the pharmacy curriculum, but at this time I believe that we should concern ourselves with the nature of the laboratory work to be included in this basic course.

In determining the nature of this laboratory work, it appears to me that the most logical procedure is first to set up the objectives which we expect to achieve by our laboratory teaching. Only when we know our goal do we have a sound basis upon which to make our selection of laboratory material. I have grouped these objectives into three classes: educational, professional and technical. These are indeed not only objectives of a course in laboratory pharmacology but may be as well objectives for the whole pharmacy curriculum. Let us examine them more closely and see their special relation to pharmacology.

Educational. While it is true that the primary purpose of many students who enter pharmacy, is to learn a trade, whereby they may earn a living, it must be remembered that the responsibility of the faculty consists of more than simply teaching a trade. A university is primarily a place of intellectual awakening for the student. A faculty which does not kindle the spark of the intellect and encourage its first flickerings is unworthy of its name. In past decades it was believed that studies of Latin, Greek, ancient history or higher mathematics achieved this objective. But educators now realize that any subject can be intellectually stimulating or culturally uplifting if those who teach will but make it so. To achieve this objective it therefore becomes necessary

to teach not specific items of information, isolated facts of routine procedures, but rather, fundamental principles, their applications and methods of formulation.

Therefore, in the first place it becomes important that laboratory experiments be chosen for their value in demonstrating principles or showing methods of scientific reasoning.

Professional. While we stress the value of pharmacology as an educational force we must not forget that students are faced with the practical problem of earning a living and that those who enter pharmacy desire to become pharmacists. We, therefore, have the responsibility of organizing our laboratory work in such a way as to furnish a student with information of such a nature as to make him a valuable unit in our modern civilization and enable him to render efficient and understanding service to humanity in his chosen profession. Therefore, in the second place, experiments should be selected which will enable him to understand the actions, uses and dangers of the drugs which he dispenses.

Technical. Every science has its own techniques and procedures which are peculiar to it. Certain of these are fundamental and anyone who makes any claim to having taken a course in pharmacology should have some familiarity with them. The third objective therefore should be to acquaint the student with what might be called the grammar of pharmacology. From the ranks of those who take the basic course must come a few who will specialize later to carry on research and advance the scientific knowledge in the field of pharmacy. These although few in number may later be great in influence, and for these a sound foundation of pharmacological technique is important. And so, in the third place, experiments should develop technical skill in basic procedures.

Now with these objectives in mind let us consider in a more direct way the nature of the laboratory work which should be given in a basic pharmacology course. I have grouped the various divisions into which laboratory work in pharmacology might conceivably fall and have tried to delineate in a broad way under each group the kinds of experiments which achieve the objective just set up.

General Pharmacological Techniques. Methods of administering drugs. Methods of recording pharmacological action. Collection and tabulation of data. Interpretation of data and formulation of conclusions based thereon. Antagonism and synergism between drugs, mechanism and toxicological significance.

Locally Acting Drugs

Observation of the action of irritants and corrosives on excised skin and intestine.

Observation of the action of protein precipitants.

Observation of the action of locally acting drugs in the intestine. The effect of salt solutions, and local irritants on peristalsis.

Central Nervous System Depressants and Stimulants

The characteristics of the stages of general anesthesia and the characteristics of the agents commonly used as anesthetics.

Side actions of anesthetics.

Central Nervous system stimulants their locus of action and the nature of the convulsion which they produce. The mutual antagonism between them and the depressants and their use as analeptics.

Drugs Affecting Respiration

Methods of measuring respiratory rate and volume. The manner in which drugs affect respiration.

Drugs Affecting the Autonomic Nervous System

Methods of measuring activity of various organs affected by autonomic drugs such as heart, intestine, salivary glands.

The characteristics of the agents which act through the autonomic system. Mutual antagonism of adrenergic and cholinergic drugs.

Drugs Acting on Smooth Muscle

General technique for studying smooth muscle. Effects of ions on its activity. Action of stimulants and depressants.

Drugs Affecting the Circulation

Drugs which act on the heart and thereby induce circulatory changes. Drugs which act on the vasamotor center. Those which act on the peripheral blood vessels. Those which act on the heart.

Techniques of measuring circulatory effects of drugs such as blood pressure, heart rate, organ volume.

These divisions are not intended as a practical guide for laboratory work but as an indication of important general drug actions which are available for laboratory use and which students should experience. There are obviously a number of ways in which an experiment can be used to show more than one thing. For example, most of the techniques and methods set up as desirable under "General Pharmacological Methods" will be learned incidentally in the administration and observation and interpretation of the action of specific drugs.

I realize that an outline such as this is by no means unequivocal and that each teacher of pharmacology will have his own opinion regarding the objectives and laboratory work of the pharmacology course. Most of us in our teaching of pharmacology have formulated our courses pretty much to ourselves, striving to perfect them according to our individual notions of the function of pharmacology in the pharmacy curriculum. In many cases these efforts have resulted in exceptionally good courses. These have, however, been developed generally without the kowledge of what others have been doing in the same field. I believe that the time has now come when we should present to administrators of schools of pharmacy the consensus of our opinion as to the type of course this pharmacology should be. The machinery with which we can do this is available in the Pharmaceutical Syllabus which is at present undergoing revision, and as chairman of the Sub-committee on Pharmacology and Biological assay I earnestly solicit suggestions from all of you so that upon completion this will truthfully indicate our conception of a pharmacology course which will be adapted uniquely and specifically to pharmacy.

DISCUSSION

Dr. H. Holck, College of Pharmacy, University of Nebraska.—We give a full year course in pharmacology and one semester of bioassay. Physiology is completed before pharmacology is begun. Because comparative anatomy is not required we demonstrate the "physiological anatomy" of the dog under anesthesia; this also reviews some important aspects of physiology. Demonstrations upon dogs should be given by the professor to ensure proper anesthesia, which helps avoid unnecessary criticism by the humane societies. With lower animals the students do a large share of the experiments. This helps to prepare

for any future hospital or bioassay work. Simple techniques are preferable, as seen in the Laboratory Guide by Edmunds of Michigan, lest the students spend the major part of their time in mastering the apparatus. It seems better not to limit teaching to one animal such as daphnia or the frog. Greater variety prepares the student better for bioassay work in which many species are used. They also can understand the literature better, hence can better evaluate the various claims made for new drugs and separate the wheat from the chaff. It enables them to recognize the bogey and bombastic sales talk when they become their own buyers in their own stores. It prepares for more intelligent discussion with the physician. Often comparative pharmacology demands several types of animals, as in the case of morphine. We use all the common laboratory animals (such as worms, frogs, mice, rats, guinea-pigs, rabbits, dogs, pigeons and roosters) and also man himself. Here one must guard more carefully in preparing the medicines and be ready to meet hypersensitivity. Students must know in advance the object of the experiment and the results to be expected; thus, if results are atypical, an immediate attempt to find the reason may be made. To ensure such preparation it seems necessary to give unannounced laboratory quizzes. At the end of the course an individual practical examination is given in which the student is asked to diagnose typical therapeutic or toxic actions. A good workshop and technician is highly valuable to aid in improving teaching methods and aiding the professor in the research work he does to benefit his own education and ultimately his teaching.

Dean E. R. Serles, Division of Pharmacy, South Dakota State College.—If there is any criticism of pharmacology as it is taught in pharmacy schools today, it is not of pharmacology at all, but rather of the glorified compilation of vast techniques of first one thing and then another. A thorough knowledge of anatomy and physiology is necessary if we are to develop the right type of pharmacology for pharmacy students. The expense incidental to the equipment of a pharmacology laboratory does not equal the expense of equipping a good pharmacognosy laboratory, nor does it compare with the expense of a drug assaying laboratory that purchases electrical equipment for vacuum drying, a constant temperature apparatus, nor does it even compare with the cost of equipment necessary for a student to do the simplest chemical assays required by the United States Pharmacopoeia. The cost of animals and their maintenance in laboratory cages is no more expensive than the sublimation of drugs for practical pharmacy and dispensing which in most colleges are poured down the sink after the student has prepared them. These are facts I have learned from experience in my own institution.

Certainly the student should participate in the actual laboratory work. I have no objection to the student giving an overdose of strychnine and seeing the animal die right before him. He will recall that picture when he compounds a prescription and realizes what an overdose might do to the patient. The life, welfare and recovery of the patient depends fully as much upon the preparation of the remedial agent as it does upon the written prescription as submitted to a drug store. That is why pharmacological training of the pharmacy

student must equal or surpass that given to the student of medicine. Speaking from experience, again I have found the student who is well trained in pharmacology is far less likely to counter-prescribe than the old time pharmacist that grew up as a sort of a herbalist. He knows that there are probably ten times as many contra-indications as there are of indications for the use of digitalis.

Finally, the technique of pharmacology is one of the most stimulating tools we have for productive thought as to what the future of pharmacy is to be.

Dean A. B. Lemon, University of Buffalo.—In some quarters we still meet the objection from doctors, that pharmacology will make druggists counter-prescribe, although we are convinced that that is not so. Counter-prescribing may be an inherited trait, difficult to eradicate by training.

Dr. Leroy D. Edwards, School of Pharmacy, Western Reserve University.—At Western Reserve there has been no resentment but the finest cooperation from the medical school when a laboratory course in pharmacology was introduced for pharmacy students. The type of laboratory work is the same as the medical students receive.

Demonstration of Cardiac Drugs[1]

L. DAVID HINER

Division of Pharmacy, South Dakota State College

The principles of the cardiac suspension method as suggested by Traube, and later subjected to various modifications by Fuehner, Williams and others (1), has been quite satisfactory for demonstrating the action of drugs on the frog's heart. However, there still appeared to be the possibility of an advantage to be gained by maintaining a definite concentration in constant contact with the surface of the myocardium without excision of the organ. With this thought in mind, a series of experiments upon the development of such an apparatus was undertaken, in hopes it would be possible to devise a technique which would secure complete and constant immersion of the frog's heart, in vivo.

The outstanding faults of the present suspension method appear to be:

1. The method of applying the drug to the heart.
2. The undue exposure of the vital organs during the

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[1]This paper originated in the Pharmacology Research Laboratory, School of Pharmacy, University of Florida. Read before the Conference of Teachers of Pharmacognosy and Pharmacology at the Minneapolis, 1938, meeting.

demonstration, especially when it is being carried out by students.

Applying the solution, drop by drop, merely bathes the organ temporarily, for the solution applied quickly finds its way into the body cavities or is completely lost by draining away from the animal. In any event, it is objectionable because the solution is either lost entirely, or it is diluted with body fluids until its action is no longer proportional to the concentration of the liquid which was first applied. The final result represents a waste of solution, or illustrates the action of an inaccurate concentration which is of no value for quantitative estimation of the effects shown by a drug in relation to its per cent strength in the solution. A suspension method modification to eliminate this fault as nearly as possible, would be a distinct improvement of the procedure.

First a means was sought whereby it would be possible to keep the heart completely immersed in the desired solution throughout the entire demonstration, and preferably with only a single application. This meant that a retainer of some sort would have to be placed around the heart in such a way that it would hold the solution in place, and also not interfere with the activity of the organ itself. To accomplish this a simple but convenient heart chamber was prepared by cutting off the closed end of an 18 mm. pyrex test tube, and reserving the lipped end. Care should be taken to select a tube which has a broad lip, inasmuch as this serves to hold the skin in place after its insertion. Two different lengths were used, depending on the degree of efficiency the operator had developed in placing the chamber in the correct position over the heart. For beginners it was cut 8 centimeters long, so that an end clamp could be used to hold the tube in place after its insertion. See Figure 1.

When sufficient skill had been attained in handling the apparatus, the clamp was dispensed with and the length of the heart chamber was shortened to 2 centimeters. See Figure 2.

Other necessary equipment included a frog board, ring stand and clamps, a probe, scissors, hemostat, forceps, a kymograph, and an adjustable heart lever.

The technique of inserting the heart chamber is carried out as follows. Pith the frog, taking care that insensibility is complete and that the righting reflex is completely abolished.

Beginning at a point about midway down the abdomen, make an incision in the skin about an inch long and extending to a point just short of being midway between the forelegs. With a probe loosen the skin at this point so that the lip of the heart chamber will slip under and into position. Grasp the tip of the sternum with the forceps, lift it up and back toward the head, and carefully cut away the end of the sternum held by the forceps. The opening over the heart thus made should be circular in shape, and about one centimeter in diameter. Free the heart of its pericardium, and carefully manipulate it into place in the circular incision. If properly done, the heart will swing free in the opening so that it will be nearly closed when the heart is lifted up and into position by the weight of the heart lever when it is attached. Lower the hook and thread down trough the heart chamber, and carefully pass the hook through the tip of the apex of the heart. The glass chamber is then ready to be inserted.

Place the tube in position over the heart, and with a probe, manipulate the loose skin up over the lip of the chamber. It is then brought down to rest lightly but firmly on the tissue around the opening in the abdomen through which the heart protrudes, and the clamp is adjusted to hold it in place if the 8 centimeter tube is being used. The loose folds of skin are then secured tightly around the base of the tube by means of a hemostat. When using the 2 centimeter chamber, the hemostat serves to hold the tube in position as well as to hold the skin in place. When the heart lever is adjusted the set up is completed, and if properly done there should be no leakage of the solution which is subsequently placed in the chamber. The method possesses the following advantages:

1. The heart chamber is easily prepared in any laboratory.
2. The technique of inserting the chamber is not difficult.
3. A minimum manipulation is accomplished which permits a normal heart action.
4. A single application is all that is required to keep the heart completely immersed during the demonstration.
5. The concentration in the chamber remains fairly uniform, and there is no loss of solution.

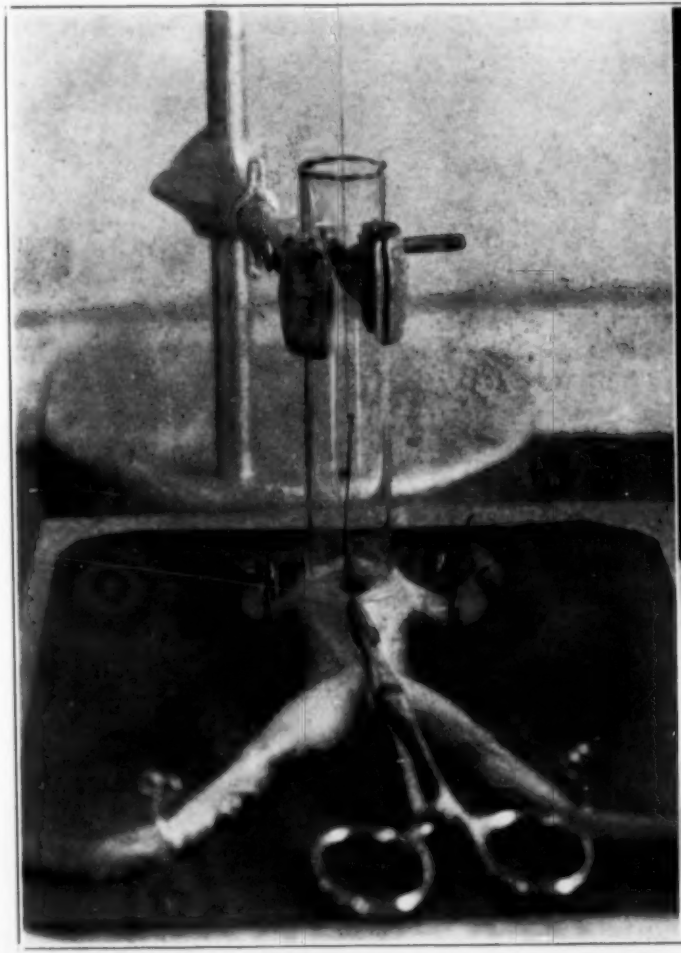

FIGURE 1

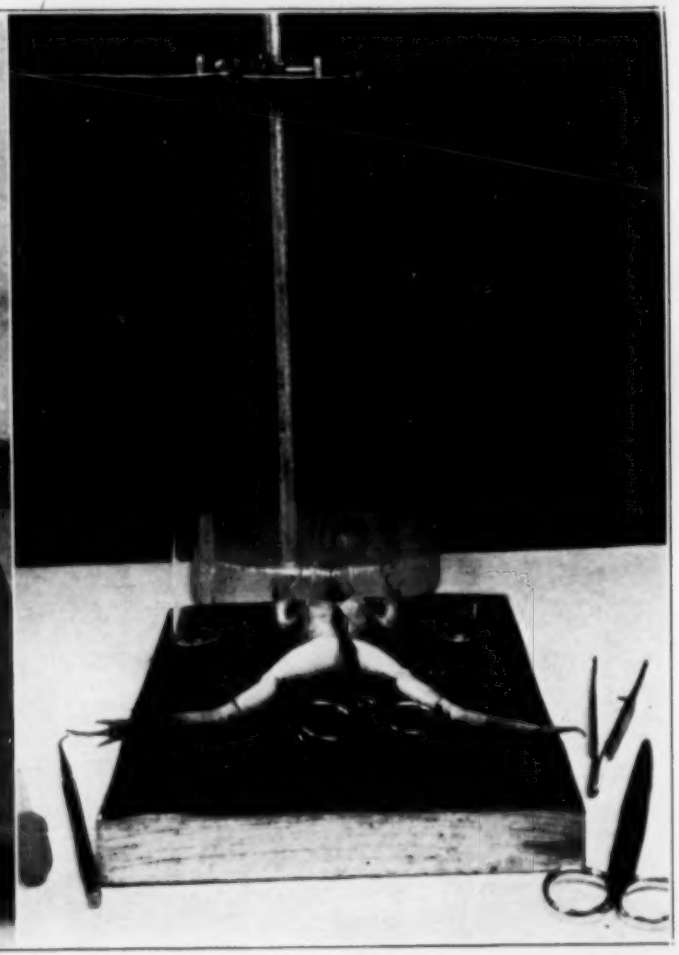

FIGURE 2

6. The apparatus and technique appears suited to the laboratory demonstration of cardiac stimulant and depressant drugs.

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DISCUSSION

Following the demonstration by Dr. Hiner, discussion centered around the various findings of his digitalis studies with the new heart-chamber technique. Quite constant systolic stoppage times had been secured with any one of the various digitalis solution concentrations and the time of heart standstill was to a close degree inversely proportional to the concentrations used. Even when a heart occasionally stopped for a minute or so shortly after applying the digitalis solution, in which distilled water was used as the diluent, the total time for systolic standstill was unaltered. When frogs of uniform size and with similar storing conditions were exposed to various proprietary digitalis preparations, all supposedly adjusted to identical strength, results varied from a stopping time of 1 minute to 11 minutes; a test with one preparation had shown a constant reaction time for this solution. It seemed that isolated principles were more rapidly absorbed than whole leaf ones; these isolated principles gave no beneficial action, only the systolic standstill. Adjusted solutions of ouabain gave the typical digitalis reaction, but the reaction was completed in a much shorter time. Thus the U. S. P. reference standard digitalis powder seems suited for comparison with whole leaf preparations, but not for isolated principles. Although the author had started out to find a method of assaying digitalis by its typical actions of slowing and improving the heart beat (which gave very irregular results) he ended with a method which, like those in existence, measures chiefly the toxicity reaction; he considers this a serious handicap in using such methods for evaluating the strength of digitalis or its active principles.

The first number of the Auburn Pharmacist, the student publication of the Alabama Polytechnic Institute, has been received. It is published as a chronicle of the activities of the students and alumni. This is a worthy undertaking. It gives the students an opportunity to write and express in a form that will be permanent the best there is in them. A similar undertaking is now being carried on in many colleges of pharmary. It shows a virile student body. It deserves the moral and financial support of the alumni and all interested in pharmacy in the state of Alabama.

REPORTS OF COMMITTEES AT THE 1938 MEETING

(Continued from the October, 1938, number.)

Report of the Committee on Pharmacy Predictive and Achievement Tests

1. This committee, in conjunction with a sub-committee of the Committee on Measurement and Guidance of the American Council on Education, has completed the plans for a five year study of pharmacy achievement tests. The American Council on Education has approved the plan as being soundly conceived and effectively set up.

2. Efforts of this committee to secure the necessary funds to finance the proposed study have failed. The General Education Board and the Carnegie Corporation denied the committee's petition for funds because these bodies are interested primarily in general education and not in professional education. Therefore, financial support of any study of this kind must be borne by the participating colleges, as was recommended in 1936 by this committee and adopted by the Association upon recommendation by the Committee on Resolutions.

3. Inadequate financial support for this committee's original plan of study necessitates the abandonment of studying achievement tests at this time. The committee will do well to examine existing aptitude tests and the possibility of their application to entering pharmacy students.

4. As instructed during the 1937 meeting of the Association, this committee has examined into "the desirability and practicability of giving simultaneously for one year or more, identical intelligence tests to the freshmen of all schools of the American Association of Colleges of Pharmacy, the results to be assembled and published in the American Journal of Pharmaceutical Education or as the Committee may determine." In view of the present impossibility of carrying out the original plan of study, this committee believes that the

administration of intelligence and aptitude tests, as suggested, is feasible and desirable.

5. This committee recommends:
   (a) That this committee assemble a representative sampling of available aptitude and intelligence tests which might be applicable for administration to entering pharmacy students, and that the cost of such procedure be borne by the Association. This cost should not exceed $50.00.
   (b) That this committee study the aptitude and intelligence tests thus assembled and be prepared to recommend at the next meeting of the Association certain tests for use in schools of the Association.
   (c) That this committee examine thoroughly the cost of administering such tests and be prepared to state definitely, at the next meeting of the Association, what the cost would be to each school participating.

Carl J. Klemme, Chairman.

Report of the Committee on the Activities of Students and Alumni

The committee thought it best this year to exclude from its report activities of a social or athletic nature. Such activities are found in all colleges. It felt that it would be much more important to give special emphasis to some of the more unusual and apparently successful student activities.

At Washington State College of Pharmacy and at Loyola University of New Orleans the student societies have conducted an open house for high school students. A general invitation is extended through the press and radio. During the open house, groups of high school students are conducted through the laboratories, and some of the interesting methods of pharmaceutical technique are explained and demonstrated. At Loyola, it has been found that small gifts of tooth paste prepared by the students during the period have proven popular.

At the University of Oklahoma, one day each year is reserved by the students for conducting a convention for edu-

cational purposes patterned after the convention of the American Pharmaceutical Association. Students prepare and present papers in the various sections with much interest and enthusiasm in a manner similar to our national conventions. The committee feels that this type of student activity is worthy of emulation by other student groups.

In a large number of colleges, where radio facilities are available, student activity in radio programs is becoming increasingly noticeable. With proper preparation these have been very successful, entertaining and educational.

At several schools, the editing of the local school paper for one complete issue by the student pharmaceutical societies through the cooperation of the school of journalism has proved to be of interest for those who have participated in the work.

The professional exhibit work which is being performed by numerous student organizations in our schools for professional pharmacists who do not find time to prepare such elaborate exhibits is a splendid extra curricular activity. This work is outstanding in its educational value for the laity, gives the student experience in this type of work, and creates a fine feeling between the pharmacists and the colleges.

The committee has learned that the best student activities are found in institutions where the student activity fund is subsidized by university or college funds. The small fee assessed each student for student activities does not seem to be sufficient. It might be well for the deans in colleges where student activity is traditionally low, to see if an increase in activity finances would not help to stimulate more interest.

Many societies have adopted "Mortar and Pestle" as their official name. It might be well for the Association to plan a future national organization for these groups. The committee thinks that more interest might be shown in activities under the leadership of such an organization.

At the University of Florida, a series of excellent illustrated lectures have been given to the class in pharmaceutical jurisprudence by Mr. Joseph M. Bransky, an instructor in the Treasury School for the Bureau of Narcotics. Possibly, if Mr. Harry Anslinger, director of the Federal Bureau of Narcotics, was approached, a series of lectures covering the sale and distribution of narcotics might be arranged for the benefit of all students in all colleges. The committee, therefore,

recommends that the executive officers of our Association contact Mr. Anslinger concerning this matter.

The committee wishes to commend the Rho Chi Society and the Kappa Epsilon and Lambda Kappa Sigma sororities for the interest they have shown.

Finally, the question of alumni activity is a problem in most colleges. Such activity is greatest where the faculty shows an interest in the graduates.

Edward J. Ireland, Chairman.

Report of the Joint Committee on Degrees in Pharmacy

This joint committee was appointed at the Dallas meeting in 1936 and reported at the joint session of the American Association of Colleges of Pharmacy, National Association of Boards of Pharmacy and the American Pharmaceutical Association at New York City in 1937.

"The Committee offers the following resolutions:

"First: That pharmacy adopt a specific professional degree and that this degree be Doctor of Pharmacy.

"Second: That the degrees and requirements for the same, as specified in the present by-laws of the American Association of Colleges of Pharmacy, except insofar as reference made to the degree of Doctor of Pharmacy is concerned, be retained."

May we explain that in the by-laws of the American Association of Colleges of Pharmacy, the statement is made that the Doctor of Pharmacy degree cannot be granted for work in course. We are trying to eliminate that clause in order to make way for a specific degree. Therefore, this last resolution reads this way, if I may read it again, "That the degrees and requirements for the same, as specified in the present by-laws of the American Association of Colleges of Pharmacy, except insofar as reference made to the degree of Doctor of Pharmacy is concerned, be retained."

We are offering the third recommendation for discussion:

That colleges of pharmacy be permitted and urged to offer a carefully planned curriculum of five or more collegiate years duration, and that the degree of Doctor of Pharmacy be granted for the successful completion of such a curriculum.

During the past year the committee has been very busy following up the work of the previous year. A circular letter was sent to twenty-seven deans of colleges of pharmacy selected to represent all types of colleges. This circular letter called attention to the report of this committee and asked for comment on same. A great interest in this subject of degrees is shown by the fact that every dean replied to the circular letter.

Time will not permit the committee to report these replies but they can be summed up as follows. Seven deans favored the report of the committee, five were luke-warm or suggested modifications of the requirement for the Doctor of Pharmacy degree so that two years or more beyond the baccalaureate degree would be required for its completion and fifteen deans were opposed to the establishment of a professional degree at present. Several of these fifteen suggested that a professional degree for pharmacy should be adopted at some future date, but that we should wait until the bachelor's and the master's degrees in pharmacy were more firmly established before we adopt a professional degree.

These replies were circulated among the membership of the joint committees so that all had an opportunity to read them. We believe that these twenty-seven deans represent a good cross section of all colleges of pharmacy and therefore interpret these replies to mean that colleges of pharmacy are not yet ready to accept a professional degree. Although the committee still believes that the adoption of a strictly professional degree for pharmacy, similar to professional degrees for medicine, dentistry and veterinary science, will be a wise step to take and will be of great value to our profession, we fully realize that any attempt on the part of the joint session to force such a degree on the colleges, when the majority of them oppose it, would be unwise. Therefore, the committee recommends that the discussion of this subject before the joint session be discontinued for the present and that the committees be discharged by the bodies that created them.

C. B. Jordan, Chairman.

Report of the Committee on Relation of Boards and Colleges

Six of the eight district organizations, numbers one to six, held meetings this year and if the chairman should submit a comprehensive report covering all of the worthwhile activities and achievements of these conferences, the remainder of this session would be required for its presentation. That this statement is not an exaggeration is evidenced by the fact that the printed proceedings of one district alone contains one hundred and fifty-four typewritten pages. Assuming comparable presentation and discussion by the other five conferences, the assembled proceedings would make a book of nine hundred and twenty-four pages containing 596,000 words.

The programs and proceedings of the various conferences are amazingly rich in constructive thought and useful material and one cannot study them without being profoundly impressed with the great value of these annual meetings in harmonizing and correlating the work of the colleges and boards. In 1926, when Charles Clayton for the boards and Charles Jordan for the colleges introduced into their report for this committee a resolution urging the colleges and boards to hold these joint meetings, they called attention to the fact that members of the boards and teachers in the colleges have common interests, and also to the fact that there were differences of opinion about what applicants for registration should know, and said that "heart to heart talks seemed to be the solution of the problem".

The wisdom of this proposal becomes more evident every year and this year, as in those past, these conferences, I am firmly convinced, have achieved more in the interest of pharmaceutical education and for raising the standards for professional practice and for harmonizing the former divergent views of the educators and the examiners, than any other project promoted during the same period of time.

These conferences of the boards and colleges have expanded their interests far beyond the basic idea of "heart to heart" talks to dispel misunderstandings and the scope covered by this year's programs, including studies ranging from the psychological approach in testing, through intricate statistical reports on examinations actually conducted by the boards in

schools of pharmacy, to discussions of the equipment and stock which must be found in a pharmacy to make it worthy of the name, is highly indicative of the growth, progress and value of these group meetings fostered by the two national organizations.

The fact that the board members and faculty members find so much of common interest to claim their attention, proves pretty conclusively that the original objective of allaying suspicion and correcting misunderstanding has been attained. The result has been that former somewhat divergent forces are now working in harmony for the common purpose of elevating standards and standardizing procedure in pharmaceutical education and licensure. The chairman views this expanded program and the attendant interest with the greatest satisfaction.

Resolutions from the various districts are as follows:

District Number 1. That the incoming president of the District appoint a committee whose duty it shall be to recommend the addition of a pharmacist to all local committees having charge of socialized health organizations.

District Number 2. That the boards of pharmacy and the colleges of pharmacy of each state meet in annual conference for the purpose of considering the examination questions used by the board with special reference to the answers made by those who fail as well as to consider other matters which are of mutual importance and concern.

That the colleges of pharmacy be requested to submit to the boards of pharmacy of the district a detailed list of the preparations, official and otherwise, included in the course and prepared by the class in practical pharmacy and dispensing.

That the American Council on Pharmaceutical Education be urged to undertake studies as soon as possible leading to uniformity in the terminology used to describe the subject matter of the curriculum so the same type of work will be similarly designated in all colleges of pharmacy.

That the district examination for 1938 be confined to a terminal comprehensive examination in chemistry and that the examination be given during the last week of April if proper arrangements can be made with the various schools in the district.

That the assistance of the Cooperative Testing Service of the American Council of Education be enlisted in this project.

District Number 3. That the Syllabus Committee be requested to study carefully the questions of the operation of practical drug stores by schools and colleges of pharmacy and that pro-rata credit be given for the time spent.

That it would be a stimulus and an aid to the various state, United States Pharmacopoeial, and National Formulary committees and would increase interest in these programs on the part of applicants for pharmaceutical registration if the various state boards of pharmacy would stress these products in the choice of examination questions.

That the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy jointly prepare a pharmaceutical oath to be required of future graduates of schools and colleges of pharmacy or licentiates in pharmacy.

That in view of the increased technical and more scientific training and education now required of students of pharmacy that state board questions be made more nearly parallel to these requirements.

District Number 5. That all applicants for licensure, either by examination or reciprocity before the board of pharmacy be required to present a certificate by a licensed medical practitioner that he is free from communicable disease of a severe nature or chronic addiction to habit forming drugs.

That, whereas we as pharmacists are participants in recognized programs of public health, that in the future all government and state agencies establishing such boards shall give consideration to the appointment of a registered pharmacist thereon.

That, we respectfully request the incoming president of the American Association of Colleges of Pharmacy, to appoint Dean R. A. Lyman as faculty chairman of District Number 5.

From District Number 6. That we prepare and sponsor a law prohibiting the physician from dispensing and to prevent the pharmacist from counter prescribing.

That one pharmacist be appointed to each board of health.

That the American Pharmaceutical Association and related organizations enlarge on pharmaceutical publicity and make arrangements to have a full time publicity man with headquarters in Washington, D. C.

Two districts in their report have inquired about the possibility of financial assistance from the parent bodies for the purpose of obtaining stenographic reports and publication of

the proceedings. The incoming general chairman might profitably determine the present procedure in each district and make suggestions to the districts lacking in this service or refer the matter to the respective executive committee.

In conclusion, the chairman wishes to present a problem which should receive your attention. So much good has accrued in the districts holding annual meetings that it is unfortunate and a matter for regret that, largely because of geographical obstacles, District Number 7 and 8 are unable to assemble regularly.

In the report submitted by District Number 7, after expressing regret that agreement on time and place for all parties concerned could not be obtained, Dr. Richards continues, "This district is still a frontier region, our stores are small and few, our distances are great, and we cannot import worthwhile speakers without money. The east could render our pharmacists a service by having prominent men stop off and address some of our local groups."

The report of District Number 8 by Doctor Rising contains the following paragraph: "As you know, because of the vast distance between Arizona and Alaska, it is impossible to get our group together for a conference, and it seems next to impossible to accomplish anything worthwhile or progressive by correspondence.

"This leads me to wonder concerning the value of such a large district to the Committee on Relation of Boards and Colleges. If we are not going to be able to do anything worthwhile, why continue the district? Perhaps at Minneapolis we could plan some sort of reorganization of District Number 8 in the hopes that it could be divided into practical working units. I would certainly like to confer with both yourself and President Muldoon, also interested members of the boards about such a reorganization."

The chairman has discussed this matter with Presidents Muldoon and Swain, Doctor Rising and others, and as a result of these conferences, recommends that the schools of pharmacy and the boards of pharmacy of the states of Oregon, Washington, Idaho and Montana make arrangements for a meeting at a suitable time and place next year; that they endeavor to obtain the attendance from the other states concerned, and that out of their experience a report be sent to the new general chairman which may serve as a basis for additional recommendations next year. H. Evert Kendig, Chairman.

Report of the Committee on the Status of Pharmacists in the Government Services

This committee can again report steady progress in its efforts to improve the services rendered by pharmacists in the various divisions of the national government to which they are eligible and to improve the status of these pharmacists.

In its report submitted at the last annual meeting, the committee reviewed the progress made during the preceding ten years and also set out the approximate number of pharmacists in the various government services and their status. No change of importance has occurred since that report, with the two exceptions referred to below.

MEDICAL ADMINISTRATIVE CORPS, UNITED STATES ARMY

A second examination was held in December, 1937, to fill ten vacancies in this corps to which only pharmacists are eligible.

Prior to this examination, Dr. Ernest Little, as Chairman of the Executive Committee of the American Association of Colleges of Pharmacy, was kind enough to write to the dean of each member school calling attention to the importance of promptly filling the existing vacancies and requesting their cooperation in bringing the examination to the attention of those graduates who would be interested and would probably meet the exacting requirements.

Ninety-one applicants met the requirements and were admitted to the examinations; 3 withdrew, and of the remainder, 57 failed the physical examination, 26 failed the other examinations and 5 were commissioned. This gives a total of 7 officers in this corps as the result of two examinations.

In a letter recently received from Surgeon General C. R. Reynolds and which will be read in full at the first general session of the American Pharmaceutical Association, the following very encouraging comments are made:

"I am happy to say that the appointees, of which there have been seven, have made a splendid impression on the military establishment and are receiving training in their

general military duties as officers of the army, to be followed by assignments in the field of instruction and the laboratory and supply services. I believe the pharmaceutical service of the army will be greatly improved by these officers and the instruction of assistants will be placed on a more scientific and thorough-going standard. We intend to train and employ the pharmacists who are appointed in the Medical Administrative Corps in a manner similar to that obtaining in several continental armies where the pharmacist as a commissioned officer is doing much toward the scientific development of the medical service in general."

A third examination is scheduled for November 14-18, 1938, to fill nine vacancies and it is very important that all of the vacancies be filled. If so, the first quota of sixteen will be filled and a further quota can be requested. Furthermore, if this quota is acceptably filled, it will further our efforts in other directions, especially in the navy. The assistance of the deans and other officials of the schools and colleges is earnestly requested and it should be noted that no applications will be received after October 29, 1938. Copies of the official release and of the American Pharmaceutical Association Bulletin are attached.

CIVIL SERVICE

The American Pharmaceutical Association has recently been requested to furnish additional information with respect to the education and training of pharmacists and the impression is gained that further consideration is being given to the requirements for pharmacists who enter the government employ through civil service examination and to the possible establishment of additional classifications for pharmacists in the professional and scientific service. Classes 1 and 2 are all so far established.

These developments would be of importance not only because of the improved status and pay of pharmacists now under Civil Service but also because additional positions and personnel will be provided. The legislation recently enacted by Congress is almost certain to lead to an increase in personnel including well trained pharmacists. Again the interest and assistance of school officials and others is requested in seeing that civil service examinations are brought to the attention of qualified graduates.

In general, it can now be said that basic legislation and

other provisions have been secured for the recognition of pharmacists as professional persons and for the improvement of pharmaceutical service in every division of the government to which pharmacists are eligible and that these efforts will, without doubt, lead to an increase in the employ of pharmacists through new positions and increase in the number employed. It has already been indicated that pharmacists in certain divisions will be requested later to take on additional duties which will require increased personnel. It is now our objective to see that the basic legislation and other provisions are extended and improved and that additional grades and positions are established as experience may indicate to be necessary or advisable.

However successful we may be in these efforts, success is dependent on the character and qualifications of the pharmacists who enter the government service either through commissions or through the civil service, and our program must include greater attention to the training and selection of those who represent our profession. The committee trusts that these positions and duties be given careful consideration in the pharmaceutical curricula and in the revision of the Syllabus.

H. Evert Kendig, Chairman.

Report of the Committee on Food and Drug Legislation

A summary of the work of this committee appeared in the American Journal of Pharmaceutical Education *2*, 88-91 (1938) No. 2.

During the year the committee has stood ready to assist, in any possible way, in the efforts to pass a better food and drug law. However, no public hearings were held on the bill or bills during the year and all the committee could do was to urge that each member of the auxiliary committee contact their congressmen and urge support of this legislation.

Senate Bill 5, entitled "The Federal Food, Drug and Cosmetic Act", was delayed in passage because a controversy arose regarding whether the provisions against false advertisements should be enforced by the Secretary of Agriculture or by the Federal Trade Commission. You will recall that the committee argued that these provisions should be enforced by

the Secretary of Agriculture because we believed that the Secretary through the Food and Drug Administration had a trained technical force competent to pass upon the truth or falsity of therapeutic claims and we believed that the Federal Trade Commission did not have such a technically trained force and we therefore held that the former body would be in better position to enforce these provisions.

This controversy was settled by the passage of the Wheeler-Lea Act which placed the enforcement of these provisions in the hands of the Federal Trade Commission. This places the products under a divided enforcement jurisdiction and the wisdom of this remains to be determined. The powers of the Federal Trade Commission have been extended and the Commission has become more active. We, therefore, hope and believe that the Commission will give us an efficient enforcement of the false advertisement provisions of the Act.

With this controversy out of the way there was little opposition to the proposed enactment of food, drug and cosmetic legislation.

The Act as passed is named "The Federal Food, Drug and Cosmetic Act". Briefly its history is as follows: Senator Copeland introduced the first bill, Senate Bill 1944, the so-called "Tugwell Bill" on June 12th, 1933. This bill or modifications of it were repeatedly reintroduced by him and was last introduced on January 6th, 1937, as Senate Bill 5. This bill passed the Senate on March 9th, 1937, and the House, with a slight modification, on June 1, 1938. A conference of the two houses was agreed on June 13, 1938 and the bill was signed by President Roosevelt June 25, 1938 and thus became a law. It took five years of earnest hard labor to secure this law. It is not all that we asked but it does strengthen the old Food and Drugs Act in many particulars and is, perhaps, as much as we could expect.

It is needless for this committee to discuss the law in detail as the Act has been distributed in printed form and has been discussed in the American Journal of Pharmaceutical Education, in the Journal of the American Medical Association, and in several trade journals.

Your committee believes that its efforts on behalf of this legislation have not been without value. We believe that our efforts and the resolutions passed by the Association at the Washington meeting were effective in the early consideration of this measure. Our attitude and efforts were the more ef-

fective when, it seemed, that practically all pharmaceutical organizations except the American Association of Colleges of Pharmacy were either antagonistic or lukewarm toward the proposed legislation.

The work of the American Association of Colleges of Pharmacy is not yet done and we urge that every teacher in colleges of pharmacy see to it that their students are well acquainted with the provisions of this law. Now, when the law is being tried out, it behooves us to assist by acquainting the public with its provisions and its purpose.

The food and drug acts of the several states are patterned after the federal Food and Drugs Act of 1906 and will need to be modified and brought into unison with this new act. Here is a place where every instructor can help and this committee strongly urges that they give such assistance and that every college take a leading part in bringing the food and drug laws of their respective states into unison with the new federal act.

The committee wishes to thank the Association for its splendid cooperation. Our thanks are due in a special way to the members of the Auxiliary Committee who assisted us so well in the difficult task we had to perform. We also wish to commend the individual members of our Association who spoke before various civic groups and who aided by writing timely articles in professional and trade papers.

The committee believes that its work, for the present, is completed and asks that it be discharged.

C. B. Jordan, Chairman.

The Report of the Committee on Professional Relations

The work of the Committee during the past year has advanced to a considerable degree. Twenty-nine states have reported increased activities especially with the medical and dental professions. This is an increase of five states over last year. Many more states could be added to this list but since no reply was received from them no credit can be given to them in this report.

A different procedure was used this year to contact colleges, state pharmaceutical associations, and other groups in-

terested in increasing the professional work of the pharmacist. Heretofore the chairman made the contacts in all the states. This year the chairman divided the country into approximately seven equal parts and assigned a group of states to each member of the committee. Each committee member had six or seven states in which he aided in the problem of established professional work. If professional work was not organized in the state he attempted to arouse enough interest in it to bring about some active participation by the pharmacists.

Schedules showing the professional relations activities throughout the country for the year 1837 and 1938 are a part of this report. The twenty-nine states reporting engaged in a far greater number of activities than the twenty-four states reporting in 1937. Since most of the states reporting in 1937 reported in 1938, it shows that these states find active participation in gaining more professional business pays.

Judging from the reports received, an organized division of the professional relations work among the committee members is proving successful. If a faculty member is really willing to do a good job, six or seven states can keep him pretty busy. The chairman has received excellent support from the committee members in this work.

As has been repeatedly stated by the chairman, the success of any procedure depends on the cooperation necessary to accomplish it. We have had splendid cooperation on the part of the American Pharmaceutical Association.

While the tabulated report shows what is going on professionally in each state, there is some work I should like to bring to your attention. Through the efforts of Dean C. B. Jordan and his staff, a pharmacy section was organized this year, in the Tri-State Hospital Assembly sponsored by the states of Illinois, Indiana, and Wisconsin. There are nineteen sections in this Assembly, a few of which are made up of such groups as medical staff officers, clinical pathologists, bacteriologists, hospital pharmacists and laboratory technicians. Dean Jordan presided at the opening sessions of the hospital sections.

Professor Marvin J. Andrews of the Maryland College of Pharmacy is constantly making more effective the excellent professional relations work with the physicians and dentists in Maryland. Dean C. Leonard O'Connell of Pittsburg College of Pharmacy has addressed several dental societies

in Pennsylvania during the year. His subject was "Medication, How and What to Prescribe." He supplied the dentists with prescription formulas. Professor Leslie Ohmart of the Massachusetts College of Pharmacy contributes to the goodwill by being a teacher in the Harvard Dental School. Professor L. G. Freeman of Buffalo College of Pharmacy, in cooperation with the Buffalo School of Dentistry, has published a University of Buffalo Dental Formulary which is used by the students of dentistry at Buffalo. The chairman has addressed several medical and dental meetings during the year in and out of New Jersey. He has conducted a course in dental pharmacy and pharmacology for dentists evenings in the college building. He has been requested to conduct a course again next year.

It has been the privilege of the chairman to organize and present a national dental campaign for the pharmacists through the American Pharmaceutical Association. This is a national effort to gain the professional business of the dentist for the pharmacist.

It consists of:

1. Explanatory letters to pharmacists.
2. Explanatory or introductory letters to the dentist.
3. A ten months' professional service to the dertist with prescriptions and explanations of their actions and uses.
4. (a) Articles on: "How to Write a Prescription".
   (b) "The United States Pharmacopoeia; What it Should Mean to the Dentist."
   (c) "Prescription Writing; What it Means to the Dentist."
5. A monthly news letter to the pharmacist bringing him information he needs in contacting the dentist and keeping him stimulated to complete the ten months' program.

Through the efforts of the Professional Relations Committee of New Jersey and the Committee on Pharmaceutical Problems of the New Jersey Medical Society, a small formulary will be presented through the State Medical Society to each of their 3,500 members.

The work of this committee has become quite heavy. This kind of work, when practiced by the pharmacist, gives him standing and prestige. I recommend that the Professional

Relations Committee of the American Association of Colleges of Pharmacy be continued.

George C. Schicks, Chairman.

Report of the Committee on Curriculum and Teaching Methods

At the New York meeting a paper entitled "Entrance Requirements" was presented by Dean Jordan and the Association, on the basis of this paper, passed the following resolution: "That the subject of entrance requirements be referred to our standing Committee on Curriculum and Teaching Methods."

Because of the significance and far reaching effects of the assignment it was decided to limit the work of the Committee to this single task. Dean Jordan in his paper stressed the importance of this study and the necessity of selecting students who are capable of completing the modern pharmaceutical curriculum successfully, and this report need not dwell further upon the contents of his paper.

Therefore, preliminary to setting up a list of tentative requirements to be studied by the Committee it was deemed desirable to examine the catalogs of the colleges of pharmacy to ascertain what uniformity of requirements exists at the present time. On the last page of this report is a summary of the preliminary study as set forth in the catalogs of sixty-one colleges—forty-nine member and twelve non-member colleges. The extensive variations in this compilation are apparent at first glance.

The Committee after due and serious consideration recommends the following entrance requirements for admission to the first year class in pharmacy:

1. The applicant shall be seventeen years of age; this age limit should be lowered only under exceptional circumstances.
2. The applicant must have completed a four-year course of not less than fifteen units in a secondary school approved by a recognized accrediting agency. This requirement has been established by the American Council on Pharmaceutical Education.

3. Of the fifteen units required the following are prescribed:
   a. English, four units; of which at least half shall be composition and grammar.
   b. Mathematics, two units.
   c. Foreign language (Latin, German or French), two units.
   d. Natural science, two units, one unit of which shall be physics.
4. Units in vocational subjects with the exception of typing will not be accepted for admission.
5. Until suitable predictive tests are available as a means of selecting students for entering pharmacy, only an applicant ranking scholastically in the upper half of his or her class graduating from high school shall be considered eligible for admission.

On the basis of the proper modern four-year curriculum in pharmacy, the Committee feels that these proposals represent the minimum requirements which any applicant should present for admission in order that he may be adequately prepared to carry on his studies successfully and efficiently.

Summary of the entrance requirements as listed in the catalogs of sixty-one colleges:

1. All schools require graduation from high school.
2. Age for admission: 11 schools require 17 years, 8 require 16, 1 requires 15, 30 made no statement.
3. Units for admission:
   a. Thirty-six schools require 15 units, 10 require 16, 2 require 12 units in the last three years, 13 made no statement.
   b. Fifteen schools specify no units.
   c. English: 33 schools require 3 units, 12 require 4.
   d. History: 15 schools require 1 unit (or an alternative of social science, 2 units), 4 schools require 2 units (or an alternative of social science, 2 units).
   e. Mathematics: 7 schools require 1 unit, 25 require 2, 1 requires 2½.
   f. Social Science: 4 schools require ½ unit, 4 require 1 unit (2 allow an alternative of 1 unit in history), 6 require 2 units (2 allow 2 units as an alternative).
   g. Natural Sciences: 21 schools require 1 unit, 5 require 2, 1 requires 3. Two schools specify 1 unit of physics.

h. Foreign Language: 3 schools require 1 unit, 12 require 2.
i. Six schools require a 3-unit group and a 2-unit group from foreign language, mathematics, history and science.
j. Two schools require a major of 3 units and 2 minors of 2 units from academic subjects.
k. Two schools recommend certain units but do not require them.
l. One school states that graduates from a senior high school must present 2 units in English, 1 in social science, 2 in mathematics, 1 in science and a sufficient quantity to make a total of 12 units.
m. One school requires 3 additional units from a special group and 5 from any group.
n. One school asks that academic units amount to 9, including a major of 3 units and 2 minors of 2 units.
o. One school requires a major of 3 units and 3 minors of 2 units each.
p. One school requires a grade point average of 2 for the last 3 years.
q. One school requires a major of a foreign language and a major or minor from mathematics or physics and a minor in social or natural science.

Henry M. Burlage, Chairman.

Report of the Committee on Libraries

The report of this committee is a continuation of the one made at New York last year. The introduction of that report has been printed in the Journal. The appendix was carried over from the previous year. It was returned by the secretary to your chairman during the year after having had the attention of the librarian at the John Crerar library at Chicago.

It was later sent to Mr. E. J. Crane, editor of Chemical Abstracts, for advice and help concerning the abbreviations. It is a satisfaction to know that most of the abbreviations which the committee had indicated met with the approval of Mr. Crane.

Perhaps it should be stated again that this appendix is an alphabetical list of pharmaceutical journals, together with acceptable abbreviations for them. These titles have been gath-

ered from many sources and the further we search the more we find.

In addition to the time which has been given to this problem by our friends, your chairman has spent a good many hours in making corrections and additions. He has come to the conclusion that it will be an almost impossible task to make it an entirely correct manuscript. Where authorities do not seem to agree those of lesser experience could hardly be expected to do better.

Upon examining this list it will be observed that the abbreviation for each appears first, followed by the full name. An attempt has been made to give the date of birth, life history, and death of those which have expired. A surprisingly large number have been very short lived. The state, or preferably the city, in which these journals have been published has also been given insofar as the information is available.

An attempt has been made to show the changes in titles which have occurred. Likewise mergers are indicated, without explanations, insofar as possible. While a merger of two or more publications would mean the end of certain titles, nevertheless the titles appear separately in proper alphabetical order. When a journal has expired it is so indicated by giving the death date following the birth date. Live journals show the birth date only.

OMISSIONS

This list of titles is essentially American. Nevertheless, it has been our aim to include the leading foreign pharmacy journals, especially those which have existed for a number of years. The Index Catalog, Library Surgeons General's Office, Volume 11 (1890) gives a long list of journals, in which are many short lived ones. Of these we have included only the American titles feeling that old publications which had existed for only a short time were of little value or use to us. Other pharmaceutical publications which we have not tried to include are the state association proceedings. This would be a task in itself.

A supplementary list of 32 titles has been prepared. It is attached to the appendix. These titles are numbered and the numbers have been put on the pages of the appendix to indicate the places where the additional titles should be inserted.

No one knows better than the committee the shortcomings of such a compilation as this one but we believe that it is of

sufficient interest and value to be printed or mimeographed and distributed to the faculties and libraries of the schools of pharmacy.

PROJECTS UNDER WAY

Other projects which the committee has under way are: (1) the preparation of a minimum list of journals for teaching and research; (2) a minimum list of reference books upon botany and pharmacognosy; (3) a list of reference books upon pharmacy; and (4) a similar list of books upon the subject of pharmaceutical chemistry. The projects have all had attention and will be submitted for your approval just as soon as your chairman and other members of the committee have the time to give proper attention to the matter. We are sorry not to be able to dispose of these problems more speedily.

In closing, the chairman wishes to express a word of appreciation to all those who have been sympathetic and helpful during the year.

Charles O. Lee, Chairman.

Report on Biological Abstracts

Following the withdrawal of financial support from the Rockefeller Foundation, matters appeared critical for a while for this abstracting journal. However, a plan was conceived by a special committee as a means of saving the publication from discontinuance, whereby institutions using Biological Abstracts were asked to contribute by voluntary assessment according to the number of their investigators in the sciences using the journal. Heroic efforts by biologists and biological societies throughout the country succeeded and the "Abstracts", after a brief interim, was continued.

Under the editorship of Dr. John E. Flynn, ably assisted by Dr. Jean MacCreight and with a total central office staff of eight, Biological Abstracts is now appearing regularly every month. Volume 12, Number 3, was published in July and contains the abstracts of papers published in 1937. In the interest of prompt publication, Doctors Flynn and MacCreight are personally preparing all good accurate abstracts for the printer. Only the defective or questionable abstracts are being sent to the section editors.

Considering the size of the present central staff and the

small budget available in comparison with a staff of about 35 persons from 1928 to 1935, the new administration is to be complimented upon the splendid work they have carried on to date. The most noticeable change is the prompt appearance of abstracts of recent papers.

Under date of July 28, 1938, Editor Flynn wrote as follows:

"The present staff and budget are much too small for the proper development of the Abstracts. We have to edit too rapidly, we do not have the personnel to take care of necessary matters. There will be plenty of perfectly justifiable criticism. We are operating in an emergency. It is important that the emergency character of the organization be understood so that no one will think that our present accomplishments represent our aims.

Progressively better abstracts and indexes are going to be necessary if scientists are to keep in contact with their rapidly increasing literature. We have confidence that the reorganization plans here presented in conjunction with other ideas which will probably soon be announced, will provide the funds which will make possible improvement and extension of the service of Biological Abstracts. Meantime, we are doing the best we can with the means at our disposal.

Heber W. Youngken.

Report of Representatives to the National Conference on Pharmaceutical Research

Regarding the annual meeting of the National Conference on Pharmaceutical Research which met in conference in Minneapolis on August 20, 1938, there is little need for a lengthy report.

The report of the chairman on survey of pharmaceutical research was completed in record time, all reports being completed before four-thirty.

The highlights of the conference were a splendid history of the development of pharmaceutical research ably presented by Dr. Glenn Jenkins as the banquet speaker, and an interesting symposium on digitalis, led by Doctor Hirschfelder presenting action, and by Doctor Taylor presenting standardization.

In view of a very poor attendance at the conference this year, it was deemed advisable that the program committee be

instructed to schedule the 1939 meeting during the week of the meeting of the American Pharmaceutical Association rather than on the Saturday before.

A. John Schwarz, Chairman.

Report of the Representatives to the Druggists' Research Bureau

During the past year a directing committee of the Druggists' Research Bureau has given consideration to a study of the effect upon prices to consumers of articles subject to resale price agreements permitted under the fair trade acts now in effect in 43 of our states.

At a meeting of the directing committee of the National Association of Retail Druggists in Chicago on July fifteenth, it was decided to send a questionnaire to all retail druggists in the United States. The questionnaire is to be developed in such a way as to secure from retail drug store proprietors information relative to the present selling prices of products subject to resale price agreements, as compared with the prices prevailing for these articles in these stores before enactment of the fair trade acts.

While the results of such a survey cannot be forecast without qualification, it is believed that it will be shown that in the great majority of drug stores in which the preponderant proportion of sales are made, prices of these articles now subject to resale price agreements are lower than they were in these stores before resale price agreements went into effect. If this anticipated result occurs, it will be proof, of course, that the fair trade acts cause, insofar as articles on which resale price agreements are in effect, a reduction rather than an increase in consumer cost of living. It is recognized that such a study must be conducted in an entirely unbiased and thoroughly scientific manner, otherwise, the results will not be generally accepted. Professor Harry J. Ostlund of the School of Business of the University of Minnesota, who is also Director of the Statistical Division of the National Wholesale Druggists' Association, was engaged to direct this study. In this position during the last year he has had a wide and successful experience in statistical work and a thorough familiarity with the problems in the marketing of drug products.

Paul C. Olsen, Chairman.

Report of the Fairchild Scholarship Committee

The committee is composed of E. N. Gathercoal, Hugh C. Muldoon, Robert L. Swain, and E. G. Eberle, Chairman. Dean E. P. Stout, with the assistance of other members of the faculty of the Detroit Institute of Technology, College of Pharmacy and Chemistry prepared the questions for the examination and graded the answers. Twenty-five candidates, representing seventeen schools, participated in the examination.

The examinations were given under four subjects: pharmacy, chemistry, materia medica, and pharmaceutical arithmetic. The highest average was made in pharmaceutical arithmetic, 82.52; next in pharmacy, 82.07; next in materia medica, 70.23; and lowest in chemistry, 37.12. The general average in all subjects was 68.10. The highest per cent made in pharmacy was 96.78; in chemistry, 81; in materia medica, 90.20; and in pharmaceutical arithmetic, 100. The lowest per cent in pharmacy, 35.18; in chemistry, 0; in materia medica, 38.6; in pharmaceutical arithmetic, 40. The general average in pharmacy was 82.07; thirteen made above that average; fifteen made 70 or over. The general average in chemistry was 37.12; twelve made above the average; fifteen made 70 or over. The general average in materia medica was 70.23; fifteen made above that average; fourteen made 70 or over. The general average in pharmaceutical arithmetic was 82.52; eleven made above that average; twenty made 70 or more. The average of the general averages was 67.99; fourteen made above that average; twelve made 70 or over.

Scheduled report of twelve candidates follows:

Candidate	*Pharmacy*	*Pharmaceutical Arithmetic*	*Chemistry*	*Materia Medica*	*Average*
1	96.78	100.00	81.00	90.20	91.99
2	92.50	100.00	63.00	77.80	83.33
3	92.00	100.00	37.00	84.20	78.30
4	88.60	100.00	42.50	78.10	77.30
5	79.46	93.33	48.00	83.50	76.07
6	73.84	83.33	62.00	74.90	76.02
7	77.60	100.00	40.00	79.50	74.28
8	96.63	80.00	41.00	72.30	72.48
9	79.50	100.00	32.00	76.50	72.25
10	83.00	73.33	41.00	88.00	71.33
11	94.65	80.00	31.00	78.40	71.01
12	83.00	100.00	47.50	52.40	70.72

The candidate making the highest average, 91.99, made the highest in all branches; the next in line made 83.33. The winning candidate was listed on the high scholarship record of the university for eight quarters, and he won university honors for two years. The award is made on the basis of the highest general average of the candidate.

The winning candidate is Arthur W. Steers of the University of Washington, College of Pharmacy.

E. G. Eberle, Chairman.

Officers-Elect of the American Pharmaceutical Association for 1939-1940

The Board of Canvassers have announced the result of the mail ballot as follows: President-Elect—A. G. DuMez, Baltimore, Maryland; First Vice-President-Elect—F. O. Taylor, Detroit, Michigan; Second Vice-President-Elect—F. J. Cermak, Cleveland, Ohio. Members-Elect of the Council—H. C. Christensen, Chicago, Illinois; R. P. Fischelis, Trenton, New Jersey; Ernest Little, Newark, New Jersey.

These officers will be installed at the next annual meeting of the Association, which will be held in Atlanta, Georgia, the time to be announced later.

Speaking as the Editor of this Journal and believing he voices the sentiment of the American Association of Colleges of Pharmacy, it is with an unusual degree of satisfaction that we received the announcement of the vote. If American pharmacy does not progress under the leadership of this group of officers-elect, then there must be something wrong with the rank and file in not giving the leadership active and intelligent support.

Andrew G. DuMez brings to the presidency a high type of scholarship and culture, a personal and professional dignity, an experience that is cosmopolitan, a reputation for fairness and good judgment, and a loyalty to an ideal that has never been questioned by those who have seen him put to the severest tests. To such a leader we pledge our loyalty and the best there is in us for the improvement of pharmaceutical education and practice.

Rufus A. Lyman.

EDITORIALS

A Message from the President Elect of the American Pharmaceutical Association

To the members of the American Association of Colleges of Pharmacy, who make up a particularly virile part of the membership of the American Pharmaceutical Association, I extend thanks for the part which you have had in my election to the presidency of the latter organization. I assure you that election to this high office is an honor which I greatly appreciate and that I will do my best to prove to you that your confidence in me has not been misplaced.

Having served the American Pharmaceutical Association in various capacities over a period of more than twenty years, I believe I am thoroughly familiar with its needs and with its possibilities for service. However, as the results of the election were made known to me less than three weeks ago and as I am somewhat cautious by nature, I shall not attempt to tell you at this time of what I hope to accomplish during my term of office. Suffice it to say that such plans as are in the making will be given to you at the proper time after they have matured. I do desire, however, to inform you at this time that I am going to rely upon all of you to help me in the execution of these plans and that any suggestions or advice which you may care to offer will be gratefully received at all times.

I have learned from experience in association work that the titular head of an organization can accomplish but little without the cooperation of his fellow members and I am counting on your help to make the administration of the office of the Presidency of the American Pharmaceutical Association a successful one during my incumbency.

Andrew G. DuMez.

A Message from the President of the American Association of Colleges of Pharmacy

The American Journal of Pharmaceutical Education through its Board of Publication and particularly through its

chairman, Dr. R. A. Lyman, has given to pharmaceutical education and American pharmacy the clearest picture of the past and present accomplishments which are worthwhile and has so clearly pointed the way for future development that it deserves unstinted support not only of those associated with the faculties of our colleges, but all of the boards of pharmacy, the officers of the various state associations and those of progressive thought in the retail field.

The Journal has, in fact, reached far beyond the realm of pharmacy and has attracted the attention of educators from non-related fields. It has taken its place on a parity with journals of much longer standing and its expressions have been sought and quoted almost daily by those who are seeking to draw parallels of thought which may be of service in expressing their own ideals.

As the President of the American Association of Colleges of Pharmacy, I feel at liberty to urge solicitations for subscriptions among all members of the teaching staffs of our colleges, the state boards of pharmacy, the officers of the state associations and any others whom you might feel would be benefited thereby.

Earl R. Serles.

What Are the Fraternities Doing?

For some years past the average college fraternity has seemed to be turning more and more into a social group of one kind or another. Gradually the various reasons for the original beginnings of the college fraternities have been either discarded or disregarded. At present many groups are no more than clubs where people of similar tastes get together to amuse themselves.

However enjoyable such groups may be in a social sense, still a college fraternity should have some definite reason for being. It should be a force in the undergraduate life of the college. It should supplement the aims of the institution in the development of the educational program.

Regular meetings of any undergraduate fraternity should be primarily of definite value to the undergraduates. Each student should take away with him something that is beneficial to him. The meetings should be so conducted that they

are instructive, constructive, and creative. They should call forth the abilities of the students and enable these abilities to develop further.

If the fraternity does not have such a program, if it is nothing more than an amusement group meeting to beguile the tedium of student life, then the fraternity is not seeking the ideal of the founders of fraternities, and the justification for the fraternity becomes doubtful.

The original college fraternities were all formed primarily to foster scholarship and character. The development of scholarship and the inculcation of the traits of character in the group should always be the aim of the fraternity. And yet how often we see no emphasis placed on either!

I believe we are all perfectly familiar with the average student's aversion to be thought a "greasy grind", to use the parlance of the students. And yet the objective of the colleges is the development of students from the standpoint of scholarship and character, the training of men to take an increasingly intelligent part in the affairs of the world. It has always seemed to me that a person can be a better scholar if he does get more out of his college career than mere book-learning, if he takes part in extra-curricular activities and is more than a typical "book-worm".

The fraternity is such an extra-curricular activity, but that does not mean that it should not be related to the academic program. It should supplement the regular work through a definite plan.

From the observation of fraternities in colleges in general, both pharmaceutical and others, one can readily see that the fraternity that has a real plan of procedure is the exception. A pharmaceutical fraternity should have as its aim the improvement of the profession its members are entering.

There are three fundamental points that should be considered in studying what the pharmaceutical fraternities could do:

First, the meetings of the fraternities should be conducted as formal gatherings of professional men. The proceedings should be according to parliamentary law and the established rules of order. Then the most important part of the meetings should be given over to a program designed to stimulate the members regarding their profession. This could be done by papers and talks on subjects related to pharmacy, e.g., laws,

practices, drugs, etc., and also by debate and discussions on controversial matters, again related to pharmacy.

Second, the fraternities should be very critical in the selection of members, judging the candidates by their scholarship and character so that membership will have some significance. This does not mean snobbishness, but rather the placing of a premium upon the essentials.

Third, the fraternities could appoint a scholarship committee whose purpose would be to work with the faculty to improve the scholarship of the various groups and of the college at large.

This committee would primarily encourage and aid the fraternity members to attain the highest possible degree of excellence. Later the idea might readily be expanded to extend aid to anyone in the school.

What has been suggested here is not claimed to be all that could or need be done. It is given simply with the idea that it will stimulate thought regarding certain groups in our colleges, groups that could do a worthwhile work toward the elevation of the pharmaceutical profession by encouraging scholarship and character.

Edwin M. Durand.

Visual Instruction In Pharmacy

Occasionally papers have been presented regarding this type of instruction. Pharmacognosists have been the chief contributors. One such paper by Frank H. Eby, Journ. A. Ph. A., 43, XXIII (1934), is very informative regarding sources of material. The work being done at the Massachusetts College of Pharmacy, as well as at some other institutions, is laudable. One pharmacognosist recently told me that he has a private collection of over one hundred moving picture films, in addition to lantern slides, on various subjects pertaining to his work. About a year ago I noticed on an Abbott program, a moving picture of the cascara industry. Three years ago, I saw a picture at one of our local theaters that had great educational possibilities. The title was "Roses of Bulgaria". It was a beautiful thing, in natural color, that showed the production of the oil of rose and gave among other things, the quantity of rose petals it takes to produce a given amount of

oil. Upon inquiring as to how to obtain this film for class use, it was suggested that I ask another theater to show it at a later date. When this suggestion was followed up, I was informed that the film was no longer available.

It seems to me that this whole field of visual education in pharmacy needs organization. I wonder if it would be practical to establish a section in the Journal on Visual Instruction in Pharmacy, with possibly subdivisions for pharmacognosy, pharmacology, etc., as is now done in the Year Book for literature? Perhaps in time we could have an editor for this section that could advise us about current moving picture releases that would be of direct educational value.

It is impossible for each school to buy or prepare all films that are needed on each subject. I am thinking of a pharmacognosy lesson, the subject of which is gamboge. Instead of depending on the usual drawings in the text, possibly supplemented with pictures from other sources, how much more interesting it could be made with a color film. It is not possible for each instructor to go to Siam and prepare his film. But it might be possible for this Association or some other association to send the necessary men and equipment to make pictures of this as well as other drug industries.

I do not mean to discredit the invaluable work that has been done for pharmaceutical education by this Association, when I say I wonder if a little effort along these lines would not be as much worthwhile as some of the things we are now doing.

Kenneth Redman.

Young Men In Pharmaceutical Education

"All we have of freedom, all we use or know—
This our fathers bought for us long and long ago."

These lines by Kipling express a truth in exaggerated form that is generally acknowledged. They should convey the message to all who are young in experience and who desire to grow through service that there is much to be learned from those who are veterans in the ranks.

The extensive advances in the academic standards and the expansion of the curricula in our pharmacy colleges, par-

ticularly within the past decade, have brought a larger proportion of young men into responsible teaching positions in pharmacy than there are in like positions in the other professions. Most of these young men have proved themselves to be possessed of strong minds and orderly thought processes by successfully completing a rigorous graduate education. Many of them still need to gain first-hand experience if they are to cope with the numerous and various complex problems that exist and continually arise in pharmacy and pharmaceutical education. They need to add to their own knowledge from that of men of greater experience and understanding if they are to grow throughout their professional careers.

The richest sources of experience by proxy are the annual conventions and the general as well as the technical literature of pharmacy and the allied sciences and of education. At the meetings of the various organizations, viewpoints often are expressed that never appear in print. There, through the medium of informal, out-of-meeting discussions thought is provoked and the frank interchange of ideas is stimulated; acquaintance permits the judgment of fellow workers as they are and not as they have been imagined to be; the chance to work together rather than as individuals creates the atmosphere as well as the fact of achievement for themselves and for pharmacy; and, above all, an opportunity exists to assess the capacity and judge the character of those who are given the responsibility for leadership in our profession. All of this constitutes first-hand knowledge that cannot be attained by studying the printed works of our contemporaries and of those who have gone before.

It has been said that some of the young men in pharmacy are dissatisfied with what is being done and with the way things are done in our association meetings. If there is dissatisfaction based on sound knowledge, it is a healthful sign. If, on the other hand, there is dissatisfaction based on ambitions for personal advancement without meriting recognition through worthwhile work, it is a sign that there are some who are unwilling to make the sacrifices and expend the effort necessary to gain the right to participate in the solution of the problems of pharmacy. It is very probable that the idea that dissatisfaction is quite common is more imaginary than real. Possibly it has arisen from the questions of those who seek knowledge of why and how things have come to be as they are in pharmacy. The writer has not heard expressions

of dissatisfaction at our meetings, but he has heard numerous expressions of praise and commendation of those who devote their efforts to the various problems without reward other than the approval of their fellow workers.

The young men in pharmaceutical education have been given unusual opportunities and responsibilities. They must assume the obligation of qualifying themselves for sound leadership when they are advanced to the front ranks by gaining a breadth of vision and wisdom beyond their years. Some of the most productive ways of securing this breadth of vision and wisdom are available through affiliation with the professional and technical associations of pharmacy and the other sciences, attendance and participation at their meetings, and the study of their journals.

Glenn L. Jenkins.

Food, Drug and Cosmetic Legislation

The part that the American Association of Colleges of Pharmacy has had in promoting interest in the passage of improved federal food, drug, and cosmetic legislation is well known to the readers of this Journal. After the passage of the federal bill in the summer of '38, it became obvious that unless there was some concerted action on the part of the states to take care of their intrastate problems, great confusion would result. Further, some of the more forward looking workers in pharmacy realized that in the drafting of state laws much trouble would be prevented if all of the states would follow as closely as practical the federal statute.

In the address of Chairman Winne of the House of Delegates of the American Pharmaceutical Association at the Minneapolis meeting, in August, we find him referring to this subject as follows:

"New Federal Food, Drug and Cosmetic Legislation.—It is gratifying to be able to note the enactment of new food, drug and cosmetic legislation by the federal government, to supplant the outmoded statute of 1906. The new law becomes effective in its entirety on June 25, 1939, but portions of it become immediately effective. For the first time cosmetics come under federal regulation, as is true of devices, and that portion of the law covering cosmetics and devices becomes im-

mediately effective, as well as the law covering new medicines and drugs. It is our hope that we may have with us during this meeting an official of the Food and Drug Administration who is qualified to discuss fully this far-reaching new legislation.

"We believe, despite the opposition encountered, that a greatly improved piece of legislation has been enacted, and that it is going to bring about a more wholesome condition in the field of manufactured medicinal products. The law applies, however, only in an interstate manner. There are many abuses that need correction, that are of intrastate character, and only state laws can reach such abuses. The several states would do well to study the new federal legislation and enact state laws which parallel the federal regulations in essential features, and are uniform with the national act as nearly as local conditions will permit.

"The legislative bodies of most of the states will be in session early in the coming year and it is not too early now to begin studying the subject and drafting a model uniform act for the use of the states. Where states undertake the enactment of such new laws they may expect plenty of opposition, but they should not be deterred. Such laws are in the public interest, and promoted on that basis they are apt to appeal to legislators and receive their support."

This action on his part resulted in the appointment of a committee from the House of Delegates to draft a suitable law, the committee consisting of R. P. Fischelis, Chairman, C. Leonard O'Connell of Pittsburgh, R. L. Swain of Maryland, and by special vote of the House of Delegates, Mr. Winne was added.

The committee went immediately to work with singular unanimity of purpose, and by October the first draft of the proposed legislation was available. At that time, the chairman of the National Drug Trade Conference called for a meeting of representatives from each of the nine constituent members of this organization for a study of this whole problem. The bill of the special committee was before them, and after a day's work it was agreed that this bill might well be the basis for further study and report at the annual session of the Conference to be held in November.

In the meantime, Chairman Fischelis called another meeting of his committee, with the result that when the final draft was submitted to the Drug Trade Conference, with certain

minor changes, it was unanimously adopted as a model bill to be offered to the several states. The title and foreword to this bill should be quoted here:

UNIFORM STATE FOOD, DRUG, AND COSMETIC ACT

Memorandum to state groups fostering this legislation:

"You state doubtless has a bill drafting bureau or some department such as the office of the attorney-general, where legislation is drafted to conform to the constitution and laws of your state. The following draft should be submitted to such bill drafting department as a model for uniform legislation on the subject of drugs, devices, cosmetics and advertising thereof. It is highly essential that the wording of the uniform bill be followed as closely as possible so as to make your state laws on this subject coincide with the Federal Food, Drugs, and Cosmetic Act."

As indicated above, the federal statute has been followed as closely as possible, in instances going further in its prohibitions than does the federal bill. Under Chapter 2, "Definitions", sections (l), (m), and (n) will indicate the straightforward method that is advocated for control of advertisement within the states:

"(l) The term "advertisement" means all representations disseminated in any means, other than by labeling, for the purpose of inducing, or which are likely to induce, directly or indirectly, the purchase of drugs, devices, or cosmetics.

"(m) An advertisement of a drug, device, or cosmetic shall be deemed to be false if it is false or misleading in any particular.

"(n) For the purpose of this Act the advertisement of a drug or device representing it to have any effect in albuminuria, appendicitis, arteriosclerosis, blood poisoning, bone disease, Bright's disease, cancer, carbuncles, cholecystitis, diabetes, diphtheria, dropsy, erysipelas, gallstones, heart and vascular diseases, high blood pressure, mastoiditis, measles, meningitis, mumps, nephritis, otitis media, paralysis, pneumonia, poliomyelitis (infantile paralysis), prostate gland disorders, pyelitis, scarlet fever, sexual impotence, sinus infection, smallpox, tuberculosis, tumors, typhoid, uremia, venereal disease, shall also be deemed to be false; except that no advertisement not in violation of subsection (m) shall be deemed to be false under this subsection if it is disseminated only to members of the medical, dental, pharmaceutical and other

recognized professions dealing with the healing arts, or appears only in the scientific periodicals of these professions, or is disseminated only for the purpose of public-health education by persons not commercially interested, directly or indirectly, in the sale of such drugs or devices: . . . *Provided further*, That this subsection shall not be construed as indicating that self-medication for diseases other than those named herein is safe or efficacious."

The matter of licensing of drug products as is provided for in the Louisiana Law was not discussed. Since this may be handled in each state as they may deem wise, and as such action will in no way complicate the main issue of uniformity, it was as well omitted.

Altogether we believe that the movement started by Chairman Winne at Minneapolis in '38 has resulted in a degree of cooperation among the varied interests in pharmacy that we have seldom seen equalled. It seems fair to say that those groups, or manufacturers that to date have been playing around the fringes of the present law are beginning to realize that the federal statute has teeth in it, and that the states are really going to see that the public gets far more protection against false and misleading advertising than they have in the past.

We feel that the colleges of pharmacy should have a large part in the passage of such laws.

Wortley F. Rudd.

Uniform State Food, Drug and Cosmetic Laws

The Federal Food, Drug and Cosmetic Act signed by President Roosevelt on June 25, 1938 will become fully effective on June 25, 1939, although some of its provisions became effective immediately. With the enactment of a new Federal Food, Drug and Cosmetic Law, it becomes imperative that our state food, drug and cosmetic laws be amended or rewritten so that they will be partially, if not completely, in unison with the Federal Food, Drug and Cosmetic Act.

It will be practically impossible for a manufacturer to do a national business if our state food, drug and cosmetic laws are not more or less uniform. The American Association of Colleges of Pharmacy through its Committee on Food and

Drug Legislation took a rather active part in securing the passage of the federal law. It would be a serious mistake if we failed now to take an active part in bringing our state laws into unison with the federal law. It seems to me that it behooves every dean of a college of pharmacy and his staff to do all that they can to bring about the passage of state acts that will be in unison with the Federal Food, Drug and Cosmetic Act.

The National Drug Trade Conference has prepared a Proposed Uniform State Food, Drug and Cosmetic Act and our Association participated in the preparation of this Act through the Drug Trade Conference. A copy of this Act may be secured by addressing Secretary E. F. Kelly of the American Pharmaceutical Association.

The Association of Food and Drug Officials of the United States has also prepared a Model or Uniform State Food, Drug and Cosmetic Bill. I believe copies of this Bill can be secured from your State Board of Health. If this is impossible, copies can be secured from Dr. C. S. Ladd, Food Commissioner and Chemist, Bismarck, North Dakota, who is Chairman of the Committee that prepared the Bill.

As Chairman of your Committee on Food and Drug Legislation when it was functioning, I wish to urge every dean and member of the staff of colleges of pharmacy holding membership in the American Association of Colleges of Pharmacy to consider carefully these model bills and to participate in securing state acts that will be, as nearly as possible, in uniformity with the Federal Food, Drug and Cosmetic Act. If we fail in doing our part now in urging state legislation along these lines, the efforts of your Food and Drug Legislation Committee will be partially nullified.

No groups within the individual states will be more affected by these food, drug and cosmetic acts than will be the retail pharmacists and the pharmaceutical manufacturers. The model act prepared by the Drug Trade Conference represents the interest of these groups and well represents the best interest of public health in all states. Therefore, the securing of the passage of state food, drug and cosmetic acts is an activity in which every member of the American Asso ciation of Colleges of Pharmacy should participate.

Charles B. Jordan.

A New Jersey Decision

Recently Supreme Court Justice Porter of New Jersey ruled that the Board of Pharmacy has the right to deny permits to individuals to whom they had formerly been granted. The case in fact was an individual who was formerly engaged in business as a pharmacist during which time he repeatedly violated the law of the State with respect to conduct of his business and was on several occasions admonished by the Board for such dereliction and in one instance fined. The Statute, Revised Statutes 45:14-33, under which the ruling was made, vests authority in the Board to grant permits to conduct pharmacies "to such persons as it shall deem qualified to conduct such business." Justice Porter in commenting said "It is thus vested with discretionary power in the granting of permits and is clearly within its right to withhold the granting of permits to such persons as in its judgment it deems disqualified. Of course, it cannot arbitrarily or capriciously withhold permits. I am satisfied from the record in this case that it has not acted capriciously or arbitrarily, but in the sound exercise of its discretion has concluded that the applicant, because of his previous record, should be disqualified. I think the law is settled that the prosecutor is only entitled to relief if he can establish that there has been an abuse of discretion. I do not find that he has established that fact in this matter and hence, am constrained to find that the action of the Board was proper and cannot be set aside. The fact that the prosecutor has been put to inconvenience and expense, while regrettable, is a factor which cannot be given weight, especially in view of the fact that being a registered pharmacist and a former proprietor of a store, he was conversant with the law and if he under the circumstances saw fit to obligate himself before obtaining permission, he cannot complain because of his own shortsightedness or poor judgment."—From the New Jersey Journal of Pharmacy.

Who Does the Board of Pharmacy Work For?

This editorial was suggested by chance remarks made from time to time by Board members in the presence of the writer.

Although the opinions expressed are personal, they may be helpful. The remark is usually to the effect that the state association expects the board member to do so and so. Occasionally state board members and officers become imbued with the idea that, inasmuch as they are appointed upon recommendation of the state association, they are in a sense working for the pharmacists of the state, through the state association. Such an attitude is wrong and may defeat the very purpose for which they were appointed. A board of pharmacy is not appointed to work for the pharmacists of the state. The board member is appointed by the Governor, usually upon recommendation of the state association, to protect the welfare of the people of the state as a whole in matters relating to pharmacy. It usually follows that the board member who works for the welfare of the people as a whole is also working for the professional welfare of the state association, although sometimes contrary to the commercial interests of its members. There are times when the board member is called upon to choose between a pharmaceutical interest and a public interest. Whenever he evades his public interest, he lays himself open to the possibility of legal contests. If the board member will make it a policy early in his term to point out to his state association colleagues that his first duty is the protection of the public welfare, he will find himself subject to much less pressure during his term of office and will receive greater respect.

H. C. Christensen.

Yes, But---

Clarence Francis, president of the General Foods corporation, told an audience yesterday that what the United States needs is more research scientists. He says we have only 30,000, against Germany's 70,000 and Russia's 100,000.

Maybe so, but before the assertion is accepted it is just as well to note that Mr. Francis said "research scientists," not candidates for the Ph. D. or Sc. D. degree. A research scientist is a man who makes a contribution to knowledge; a candidate for a doctor's degree may be one who proves that ice cream tends to melt when it is set in the sun, that the bacteriological content of an undershirt increases with the length of time it

is worn, or that when the door of an electric refrigerator is constantly opened and closed the motor runs longer than when the door is shut once and kept shut. All these subjects have served as the bases of dissertations.

Sometimes it seems a pity that the Ph. D. and the newly popular Sc. D. were ever invented. Certainly the grounds on which they are sometimes granted tend to make all graduate studies ridiculous, and degree mills have filled the country with doctors of philosophy the sum total of whose efforts have been a subtraction from rather than addition to human knowledge. On the other hand many of the ablest and most valuable explorers on the frontiers of the known have never had a degree until the brilliance of their attainments brought down upon them a shower of honors.

To add to the number of men who are doing honest and serious work in picking a little path of light through the great darkness of the unknown certainly would be one way of promoting the general welfare; but to add to the number of men who have a Ph. D., but have acquired neither wisdom nor serious purpose, would be to make the situation worse rather than better.—*Editorial of the day from Baltimore Evening Sun.*

The Index for Volume II

The index for Volume II is sent out with this number. It is printed separately for binding. The index represents an immense amount of work throughout the year. The credit for its preparation belongs entirely to Professor Zada M. Cooper who has done the entire job alone. A tedious but most important task well done.

Subscriptions Due Now for Volume III

If you have not paid your subscription for Volume III, please do so at once in order to keep your name on the mailing list. The January issue will be sent to all subscribers for Volume II, but the April number cannot be mailed unless subscriptions are paid. Mail your check to Professor Zada M. Cooper, State University of Iowa, Iowa City, Iowa.

The Editor.

THE EDITOR'S PAGE

During the last week of the last year the Editor made a pilgrimage which took him to the seventeenth floor of the Hotel New Yorker. He never goes to New York without meeting with one experience that is inspiring. The last time it was a drug store at 1209 Lexington Avenue. This time it was the falling flakes of snow coming out of the dull gray leaden skies of the early morning and falling gently in a perfectly perpendicular line as far as the eye could see into the darkness of the man canyon below. This particular type of beauty the Editor has seen only in New York and in the great pine forests of the far west, where one is always looking upward. Out where he lives the snow flakes do not fall, they drive and sting and cut so that one turns the back to the wind.

That same morning the representatives of the institutions constituting the American Student Health Association were in convention assembled in the north ballroom off the mezzanine, in an atmosphere reeking with the odors characteristic of doctors. This group of doctors guards the health of the youth of the nation by telling them to avoid those things which they themselves do not avoid. Throughout the entire morning the momentous problem of a uniform medical examination blank for all students entering all colleges in the nation was debated. After three hours of heated discussion, we came to the conclusion that such a form could not be formulated and probably would not be desirable if it could be, facts that we all knew before the discussion was begun.

And that reminded the Editor that for many years the American Association of Colleges of Pharmacy, through a standing committee on Uniform College Bulletins labored to bring about uniformity of college bulletins and then evidently came to the conclusion that such uniformity was impossible and probably undesirable and abolished the committee. Things we all knew before the effort was made.

The Editor believes that a problem more important to the health of the nation than the adoption of a uniform examination form, or to the cause of pharmaceutical education than the adoption of a uniform type of college bulletin, would be the adoption of a uniform pencil sharpener for all colleges in all states. Eventually the idea might spread to Canada, to

all English speaking countries and even to the Rome-Berlin Axis. The uniform pencil sharpener might prove itself mightier than the sword, or even the plowshare and the pruning hook. It might bring peace on earth and good will to men and finally dispell from the minds of men what is left of the menace of women to pharmacy, or the menace of pharmacy to women.

And that brings us to the work of the Syllabus Committee. At Minneapolis as was stated in the October Journal, the Syllabus Committee sought the support and the cooperation of the American Council on Pharmaceutical Education in the revision of the Syllabus. This was granted by the Council with the understanding that in syllabus construction we would wipe the slate clean, would begin from scratch, and would build a workable syllabus that would command the respect of experts in the respective fields. The problem now is to build a syllabus with minimum basic requirements but keeping in mind the modern trend in education and build a flexible curriculum. We are not ready for too much regimentation in curriculum building. It would be fatal to experimentation. Each college of pharmacy should have, or develop, a personality, if we are to have progress. For a time at least, in the case of curriculum building let us get away from the idea of the uniform pencil sharpener.

It was New Year's Eve in Newark, the Editor had been accorded the privileges of the Little home in New Brunswick. There he found peace and comfort and a beefsteak, corn fed, from his native state and best of all, the affection of friends. Bob Fischelis had come up to New York from Trenton to assure him that no stones would be left unturned to obtain some state support for pharmaceutical education in New Jersey. He had seen the beautiful campus of Rutgers. He had called on Dean Jacob Lipman, the distinguished dean of the College of Agriculture, whose interest in the work and the development of the College of Pharmacy is as keen as that in his own college. He had passed the day in the plant of the New Jersey College of Pharmacy. He had seen the well-equipped laboratories and class rooms, the library, the animal quarters, the facilities for recreation, the little church hard by, where student convocations are held. He had seen ad-

jacent properties which a wise board of trustees had acquired for future development. He had seen where a dilapidated lumber yard facing the main building had been converted into a beautiful park by the city through the efforts of a member of the board. He had seen the ivy clinging to the walls, a thing of beauty, planted many years ago by the hands of Caswell A. Mayo. He had bared his head before a plaque at the entrance of the main building, bearing the name of William O. Kuebler whose efforts through a period of three decades built the old New Jersey College of Pharmacy down on High street, which furnished the foundation upon which the present structure and organization has been built. The persistence, the planning, the foresight and the kindness of Ernest Little had brought to fruition William O. Kuebler's dream and to me courage to attack with greater energy my own problems of the New Year.

The New Year revellers had begun to mill around at the Pennsylvania station. Through the car window I answered the Little smile with a feeling of gratitude for the inspirations of the day. The General glided silently out into the darkness of the night and began the westward run.

Of special interest to the readers of the Journal will be the first two letters in the Editor's Mail, from Dr. Frank B. Kirby, Director of Education, The Abbott Laboratories. Doctor Kirby is the first representative of a manufacturing house that has expressed interest in the problem of turning some of the wealth made in the pharmaceutical industries into channels which will improve our pharmaceutical educational and research institutions. Undoubtedly there are others who feel the same way and we will welcome expressions of opinions in these pages. We hope also that Doctor Kirby will give us as he finds time helpful suggestions upon the subject in this Journal. What we need are practical suggestions as to how we may proceed in this effort. The Editor wishes to repeat that he believes in the beginning it is largely an individual matter. Individuals and schools qualified to carry on certain types of work should make appeals to those who might be most interested in the particular line of work, or in a particular institution. In the Notes and News items in this issue are notices of certain research grants and gifts for

the improvement of library facilities. These can be obtained from many sources when we show our needs and the service we can render. The Editor is sympathetic with the ideas expressed by Dr. Glenn Jenkins in his paper, "Research and Pharmaceutical Progress", published in this issue. Never-the-less he still believes that it is futile to think that a permanent and lasting graduate institution in pharmacy can be built without developing a strong undergraduate college. There is plenty of evidence in this country to prove the truth of this statement. Research is necessary for progress, but so are well-equipped pharmaceutical institutions teaching on the undergraduate level.

The Editor is not in a position to discuss the McKesson and Robbins fiasco. He hopes that some way will be found to prevent the loss of thousands of dollars that innocent and honest druggists were induced to invest in this company. It has seemed to him that certain trade drug journals have gone out of their way to sell this firm to the retail druggists of the nation. On more than one occasion the Editor has been asked for suggestions as to how their pages may be improved for professional pharmacy. He has made some suggestions, but he cannot see that any of them have been adopted. The Editor has also been asked why some of our most outstanding pharmacists contribute to the pages of such journals? Those who have raised the question seem to feel that this policy tends to lower the standing of professional pharmacy rather than to elevate the standards of pharmaceutical literature. There are some things that a high type of professionalism will not mix with. A certain type of advertising is one of them. The Editor is not criticising any specific journal or individual but he is calling attention to a policy concerning which we may well stop, look, and listen, and give the problem the consideration that its importance deserves.

The Editor has frequently stated that idealism is one of the characteristics of youth. It is not the new generation that has lost its idealism. More frequently than in youth he finds idealism gone from men who have passed the milestones of middle life. Tragic but true is the statement that he has to

go to his classes to find the highest type of idealism. Perhaps idealism is like the mind, it wanes with advancing years. There is one compensation for it, in its place there comes an abiding faith as we again approach our childhood days in the cycle of life. As another bit of evidence to prove his contention, the Editor has printed "Pharmacy Week from the Students' Viewpoint" in the Miscellaneous Items section. This was taken from the Pharma-Conn published by the students of the Connecticut College of Pharmacy. A great deal has been said in recent years about working conditions in pharmacy. When working conditions are mentioned one is inclined to think of long hours and inadequate compensation. But there are conditions more serious than these. In a recent number of a trade journal the Editor read that some of the druggists of Ohio were going to demand the right to become the liquor vendors of that state. If this is so and the object is attained, does that mean that the scientifically trained young men and women from the colleges of Ohio are to become the saloon keepers of the state. If this is so, then it is time for the retail druggist also to stop, look and listen, and then act according to his honest convictions if he expects to retain his prestige as a public health servant and the respect of his community as a professional man. The compounding of prescriptions and the handling of poisons in the atmosphere of a saloon is an anachronism even in the mind of the most unintelligent layman. Idealism is a characteristic of youth, the scientific training for the practice of pharmacy is in the hands of the teaching institutions, but the conditions under which the drug store operates is the responsibility of the retail druggists.

The number of subscribers to the Journal must be increased, not primarily in order to make it self-sustaining, that may never be possible, but in order to enlist all those practicing any and every phase of pharmacy in the understanding of the problems of and the support of pharmaceutical education. At present the Editor is making a special appeal through correspondence to the members of the boards of pharmacy and outstanding retail druggists to become subscribers and readers of the Journal. To this end men like Christensen, Fischelis, Swain, Dretzka, Costello and Lascoff

have each contributed a statement as to the value of the Journal to these groups. These statements are printed in the Editor's Mail and every faculty member can obtain inspiration by reading them.

In the Editor's Mail Professor Zada M. Cooper has expressed her opinion as to the purpose of our annual meeting and the value of the reading and discussion of the reports of the work of the committees throughout the year. And to the sentiment she expresses he gives his wholehearted support. The annual meeting of the Association is essentially a business meeting and if we do not attend to the business of the Association as represented by the work of its committees, we might just as well have a guest speaker and call it a day's work and go out and see the sights. When we begin to sidestep the reports which represent hard work of our best thinkers and workers, we are not only contemplating, we are actually committing suicide. Here we are at another crossing where we can well afford to stop, look, and listen, and then act as good common sense dictates.

In these pages in the October issue the Editor paid an all too brief tribute to Dr. Earl B. McKinley for his services to medical science and especially to the special field of pharmacy in connection with the American Association for the Advancement of Science. In this issue Dr. Henry B. Ward, who is in a position to evaluate Doctor McKinley's services to science in general and to the health sciences in particular, has written an appreciation of the man and his work. We are grateful to Doctor Ward for this service.

The passing of Dean W. B. Day brings to the pharmaceutical world a note of sadness. Dr. Elmer H. Wirth has told the story of his useful life. Once President Edmund J. James of the University of Illinois said to the writer, "W. B. Day has fathered the students of the College of Pharmacy for a quarter of a century and I hope he will be spared for that service for many years to come". And he was. What finer tribute could the president of a university pay to one of his deans? Through the years the writer has never seen Dean Day's composure once disturbed. He was always in the center of things and always everybody's friend. If he had one quality that stood out above all others, it was gentleness. It was a

gentleness that had a virility. And so he will live on in the hearts of men and when the promise in the fourteenth of John has been fulfilled what a joyous gathering there will be of those who have been served by William Baker Day!

Rufus A. Lyman.

The Pharmacist As An Educational Influence*

The pharmacist in modern American life has become far more than a tradesman, far more than a scientific technician. He has become a guide, a leader, an advisor, and a counselor to all the people of his neighborhood. For to him all the people come, not only to have their prescriptions filled, but also to seek advice and leadership.

In a former day the manager of the country store occupied such a place in the life of a frontier community. That day has largely passed. Today the pharmacist has most nearly taken the place once occupied by the manager of the country store, and the pharmacy has become the headquarters of the community forum. Circumstances have cast the pharmacist into the role of the neighborhood's leading educator. If his leadership be strong, his advice sound, and his understanding of personal and community problems wise, then he leads his community in the direction of sound progress and constructive achievement. If unfortunately, however, the pharmacist be weak, untrained, lacking character and moral stamina his opportunity for great good to a community is lost, and results unfavorable to the entire community are harvested.

Herein lies one of the greatest arguments for the all round training of those who look to pharmacy as a profession. Not only must he be scientifically and laboriously trained in the technical phases of his profession, he also must possess an allround education and culture which will fit him to be a leader of men and a leader in his community. A trained pharmacist is one of the greatest assets of any community.

There is no more important service which can be rendered to a community than that given by a trained pharmacist. His influence has a coverage neighborhood wide in scope. Not only is he the neighborhood druggist but even more he is the neighborhood's educator—in health, in sanitation, in the solution of civic, economic, and social problems.

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*From a Pharmacy Week radio address by Walter D. Cocking, Dean of the College of Education, University of Georgia.

GLEANINGS FROM THE EDITOR'S MAIL

I thought that you would be interested to know that I always look forward with keen interest to your contributions to the American Journal of Pharmaceutical Education, which unfortunately reaches me only quarterly.

I like your subjects and I like your style and take this opportunity to compliment you on your brief reference to the desirable and much neglected support of pharmaceutical institutions by men who have made their wealth in pharmacy. I have an idea it would be a tremendous contribution to "the good of the order", if several nationally circulated pharmaceutical journals could have several articles from you along these lines. This has never been emphasized as it should have been.

Somehow we are not organized, thinking along the right line. Several times this year, I have met Doctor Meuser, head of the Department of Pharmacy of the West China Union University. He is interested in adding a Department of Pharmacy, or rather building for the present College of Pharmacy in this university, representing an American valuation of $125,000.

This can be planned by the university architect at no expense and using native lumber and masonry reducing the actual cost to $65,000. When he reached the United States a year ago the exchange was three to one, bringing the cost in American money to $20,000. Now the exchange is six to one at a cost of $13,000 in American money.

Such an investment $13,000 would buy $125,000 in value and contribute largely to American pharmacy by keeping out much German and French supplies and yet to date no individual or group in pharmacy has come to the rescue or accepted the opportunity.

November 2, 1938.

Cordially yours,
FRANK B. KIRBY,
Director of Education,
The Abbott Laboratories,
Chicago, Illinois.

And again under date of November 17, 1938.

Let me thank you for referring me to that interesting article in the American Journal of Pharmaceutical Education (Problems and Plans Committee Report, pages 585-588). Enlarging just a little on your interesting suggestions, my thought is:

1. Sound rational listing of undergraduate requirements, both as to subjects to be taught and the equipment offered to give the best teaching commensurate with today's requirements.
2. A double column listing first, the equipment already available and second, the requirements, as covered by the necessity for an effective postgraduate course.

Simply to list what equipment a college *has* would scarcely make an effective appeal. Against that, show the college *needs* and interested people should become more interested with something concrete to tie up to.

It is easy to appreciate what you bring out, namely, the fact that each college must do its own pioneer work along this line, depending on its students and more particularly on the graduates and such others in the pharmaceutical trade and allied industries, as might become interested.

Cordially yours,
FRANK B. KIRBY,
Director of Education, Chicago, Illinois.

As a reader of the American Journal of Pharmaceutical Education ever since Volume I, Number 1 was published, I most heartily recommend it to all board members. It is well worth the subscription price of $2.00 per year to them. The board member of today faces some unusual problems that his predecessors never had. One of these, since the college requirement has become practically universal, is to keep posted on what the colleges are doing. The board member is called upon from time to time to make decisions which necessitate his keeping abreast of the advances being made in the educational field. I know of no better way of doing this than by reading this Journal regularly.

H. C. CHRISTENSEN, Secretary,
National Association of Boards of Pharmacy.

It must be apparent to all that the future of pharmacy as a worthwhile professional public health calling depends upon the excellence of its educational system and it is, therefore, to the interest of pharmacists in general to know what is going on in pharmaceutical educational circles. For this reason I have closely followed the American Journal of Pharmaceutical Education since its first issue. The publication conforms to a very high journalistic standard and the articles which it has contained and the editorial views which it has expressed, deal in a very vital manner with those things essential to the welfare and progress of the pharmaceutical profession. I strongly urge all BOARD of PHARMACY members to subscribe to the American Journal of Pharmaceutical Education so that they may keep in step with the great advances now being made in the educational field. I hope that the Journal may also secure circulation among those retail pharmacists who are interested in professional development as they will find in it much to encourage and stimulate them in their work.

ROBERT L. SWAIN, Secretary,
Maryland Board of Pharmacy.

I have read with interest and profit the different issues of the American Journal of Pharmaceutical Education and have just completed the October, 1938, number. It is excellent and reflects the fine type of idealism of the editor and other leaders. I wish to compliment you and congratulate you on your selection of talks and papers for reprinting in the Journal. I especially enjoyed the contributions in the last issue by President Harry C. Byrd of the University of Maryland, and Dr. T. R. McConnell of the Department of Education, The University of Minnesota. The remarks of the latter relative to the teaching and better understanding of our social and economic problems in the professional schools is no doubt one of the important needs of today. Professional men to

occupy positions of influence in our society of tomorrow must have an improved and more scientific knowledge of our changing social and economic order. The hope of an improved professional future lies in the youth in colleges and schools of today, and a magazine of the type of the Journal will be a contributory factor.

EDWARD J. PROCHASKA, Secretary,
Minnesota State Board of Pharmacy.

Everyone engaged in pharmacy must depend upon pharmaceutical journals to keep abreast of all that takes place and concerns them. Progress along all fronts is thus recorded and the pace of progress dictates that developments be made known as they occur. The various journals devoted to pharmacy, published at frequent intervals, serve a useful purpose and it is a shortsighted policy for any pharmacist to neglect a continuation study of the changing conditions afforded through these mediums. Undoubtedly pharmaceutical education is farthest from the thoughts and concern of the average retail pharmacist in his daily work. Yet he early recognized the need for the establishment of schools devoted to this specialized training and sponsored them. Failure to keep abreast and informed about the changes in education as they now occur manifests a lack of interest that no one would care to admit. Pharmacists who desire to maintain an interest in pharmaceutical education will find in the American Journal of Pharmaceutical Education that which has not been available in other publications, namely, a journal devoted to education which is easy to read and understand. Members of Boards of Pharmacy, if they are to function properly, must have an understanding of the trends in pharmaceutical education in common with faculty members. Board members are obligated to themselves and their fellows to understand problems facing pharmacy, especially those problems dealing with education and training pharmacists, and an official journal devoted to these problems should be read and studied by all concerned.

P. H. COSTELLO, Secretary,
North Dakota Board of Pharmacy.

This Board has for some time been a subscriber to The American Journal of Pharmaceutical Education. Recently, when our renewal came due, the matter of its value to the Board Members was discussed. Not only was the Board unanimous in its praise of this publication, but a discussion evolved around the point of how its value to pharmacists generally could be brought to the attention of everyone interested in pharmacy. The wealth of material contained in each issue is amazing and I am certain that if the subscription price was five times $2.00, we would not be without it. If we can ever be of help in promoting a wider circulation of this valuable publication among the pharmacists of America, do not fail to call on us.

Wisconsin State Board of Pharmacy,
S. H. DRETZKA, Secretary.

Colleges of Pharmacy are today the gateways to our profession. What they do, how they do it, and what their faculties are thinking and saying is therefore of great interest to the profession of pharmacy and

particularly to members of Boards of Pharmacy. If you want to know what is going on in pharmaceutical education, there is just one complete and up-to-date source of information on the subject—the American Journal of Pharmaceutical Education. Four times a year—in January, April, July and October, it comes to you for the small fee of $2.00 and you are provided on each occasion with a veritable feast of ideas, plans, and reports of activities covering the selection, teaching, examination and graduation of students and the qualifications, opinions and activities of teachers and administrators. But that is not all. This Journal is not merely a repository of addresses and reports. It is a living, breathing organ which is serving to vitalize both pharmacy and pharmaceutical education. Its pages are open to contributors with new ideas and original points of view, and its editor speaks out refreshingly and interestingly on the fundamental questions of the day. You will never go to sleep reading the editor's pages. Regardless of what pharmaceutical publications you may be reading now, you cannot really be considered well informed if the American Journal of Pharmaceutical Education is not on your reading list. Every member of our Board subscribes to it and none would be without it.

ROBERT P. FISCHELIS, Secretary,
New Jersey Board of Pharmacy.

I want to take this opportunity to congratulate the American Association of Colleges of Pharmacy on this fine publication. I believe that not only should every teacher and every member of a state board of pharmacy subscribe to the American Journal of Pharmaceutical Education, but every professional pharmacist should be proud to add his name to the roster.

J. LEON LASCOFF, Past-President,
American Pharmaceutical Association.

I am glad to hear in your letter of December 24th that you sent some copies of the Journal to Mr. Istfan of Baghdad. Just two weeks ago I had a request from them to borrow one of the numbers which we have. Evidently they are having references to this Journal even before having heard about it. I am sure they will be interested in subscribing to it for their library.

During the coming academic year I shall be on furlough in America and hope to get acquainted with as many educators in pharmacy as possible with the idea of getting brushed up in our teaching technique. We are spending two months in Europe on the way to America, but expect to locate at Ventnor, New Jersey from the middle of September on. I doubt very much whether I shall get west of the Mississippi, but trust that there will be some meeting in the east which will give me the opportunity to meet you.

In the pharmacy field here the most interesting subject is that of the Egyptian examinations which the government has been enforcing for the last nine years. They are very difficult, requiring a period of nine days for their completion, including both theoretical and practical work. I have been in contact with certain students who have passed these examinations. If you would think a description of the details of these examinations would be of interest for your journal, kindly let me

know and I will see if these students could write up such an article for you.

RUDOLPH J. PAULY, School of Pharmacy,
American University of Beriut, Beriut Lebonese Republic.

I am delighted with the article in the American Journal of Pharmaceutical Education. It is an excellent statement and I am very glad that you published it without waiting to send the draft to us and I would certainly have approved it exactly as it stands.

And, also, I want to express my gratitude for your giving us the space, and going to the trouble of arranging for this fine notice. Though I think sectional publications are going to be a decided success and I believe that the continuance of Biological Abstracts is assured, it has been no easy struggle and we are by no means out of the woods. Your help is genuinely appreciated.

JOHN E. FLYNN,
University of Pennsylvania.

I have read the four numbers of Volume II of the American Journal of Pharmaceutical Education with a great deal of interest. The Association is to be highly complimented on the excellence of the Journal. It is a pleasure to enclose my check for Volume III.

ELMER H. WIRTH,
College of Pharmacy, University of Illinois.

It was good of you to send me the October number of the American Journal of Pharmaceutical Education, as promised in your letter of December 12. I have received the Journal and have looked through it with a great deal of interest.

I appreciate also your courtesy in placing my name on the mailing list. Copies of the Journal as received will be circulated to those of our personnel who are concerned with pharmaceutical matters and will, I am sure, be very useful to them.

P. B. DUNBAR, Assistant Chief, United States Department of Agriculture, Food and Drug Administration.

Perusal of the very fine pages of the recent numbers indicates that material for publication is becoming sufficiently abundant to allow for selectivity on the part of the editor, which is as it should be. One of the interesting sections to me is "News and Notes" which offers information of the more important doings of the pharmaceutical educators and researchers, which information had never been available before the publication of this journal.

CHARLES V. NETZ,
University of Minnesota.

Thank you for calling my attention to the American Journal of Pharmaceutical Education. I am especially interested in the papers by Doctor McConnell and President Byrd.

CHAUNCEY S. BOUCHER,
Chancellor, University of Nebraska.

Our advertising schedule, in effect at present, expires with the January number, copy for which we will send in a few days. We wish to continue our advertising, however, for another year beginning with the April quarterly issue.

P. BLAKISTON'S SON & CO., INC.

A short time ago, I was in the office of Dean Hugo H. Schaefer, of the Brooklyn College of Pharmacy of the Long Island University, and saw a copy of your very interesting Journal.

Being one of the trustees of this college, I was very much interested in some of your articles and I am enclosing a check for $2.00 for a subscription to same.

EDWARD NEIMETH, President,
National Magnesia Co., Inc.

As usual, I have been interested in perusing the latest issue of the Journal. But particularly, I have enjoyed the editorials.

Having always preached that pharmacy week should be observed fifty-two weeks of the year, I am happy over your sermon on the same text. Until we observe pharmacy week every week of the year, we cannot expect to get far professionally.

EDWARD KREMERS,
University of Wisconsin.

I wonder if it will be possible to obtain a copy of the Proceedings Number of the American Journal of Pharmaceutical Education. I referred my copy to President Tigert and suggested that he read the papers by President Byrd, and Professor McConnell. President Tigert is very much interested in both of these articles, particularly that by President Byrd, and would like to keep this issue of the Journal in his files.

B. V. CHRISTENSEN,
University of Florida.

Please continue my subscription to the Journal. An attempt to create a philosophy of pharmaceutical education and to view the needs of the field objectively and honestly is worthy of support.

MELVIN E. GREEN,
Cincinnati College of Pharmacy.

In any good university community one can hear an inspirational address any day and every day in the week. I should be sadly disappointed if I went to a convention and heard nothing else. I think we should continue to hear some reports.

ZADA M. COOPER,
College of Pharmacy, State University of Iowa.

You have my assurance that I will be very glad to cooperate with the two committees that are studying the Deterioration of Drug Plants and Pharmaceutical Preparations and how dispensing pharmacy is being taught in our Colleges.

CHARLES H. ROGERS,
University of Minnesota.

I certainly am glad that the study of the deterioration of drugs and pharmaceutical preparations is getting under way. I believe Doctor Dille is the man to head up this study and certainly Mr. Bibbins and Doctor Swain are in a position to render him help in organizing the study. Obviously, they will need many helpers once it is initiated. The questionnaire dealing with the teaching of Dispensing Pharmacy arrived at the College a couple of days ago. I have turned it over to Dean Schicks, who has charge of this work. I am sure that he will fill it out and return it without delay.

ERNEST LITTLE,
New Jersey College of Pharmacy, Rutgers University.

In connection with the problem, the Deterioration of Drug Plants and Pharmaceutical Preparations which will be undertaken by the Problems and Plans Committee, please be advised that we shall be happy to cooperate in every way that we can. We are happy to extend the facilities of the College of Pharmacy to that end, so please feel free to call upon us.

The questionnaire from the Problems and Plans Committee on the study of how Dispensing Pharmacy is being taught in our colleges has already received our attention. Unfortunately it did not fit our situation so very well because we have a pharmacy in which more than a hundred and twenty-five thousand prescriptions and drug orders are filled annually, which supplies all medicines for three large University hospitals and in which the dispensing is done by the members of our senior class, working in sections, under the supervision of three full time pharmacists. We are now considering creating internships in the department in hospital pharmacy.

Unfortunately we are not able to send any additional subscriptions to your very excellent Journal. Our immediate pharmaceutical staff now represents 100 per cent subscribers.

RUDOLPH A. KUEVER,
College of Pharmacy, State University of Iowa.

I wish to assure you that all of us engaged in the teaching of pharmacy at this institution will give the Problems and Plans Committee our whole hearted support in all of the work which it plans to do. I grant that the job is a big one and is without question one of the most important pieces of work in which our association could interest itself. More and more it becomes increasingly difficult to convince others that the sale of drugs should be confined solely to those trained in pharmacy and it will be of interest to you to know that a certain organization in this state has plans for the introduction into the January session of our state legislature of a measure permitting the sale of all packaged medicines by anyone. Whether such a bill will be introduced cannot be confirmed at the present time but it looks as though the pharmacists of this state will have somewhat of a fight on their hands to keep this measure from becoming a law if it should get to the legislature.

As concerns courses dealing with dispensing pharmacy I feel that this is a matter which should bear thorough study and I am firmly convinced that pharmacy students of today require a type of training far different than those students of twenty-five years ago. There are

very few practicing pharmacists who really give very much attention to young people who are obtaining their experience in drug stores, the result being that it is incumbent on the part of pharmacy schools to provide the proper type of training in this all important work.

WILLIAM F. SUDRO,
Division of Pharmacy, North Dakota Agricultural College.

I certainly appreciate all that you have done in building up the American Journal of Pharmaceutical Education. It is one of the journals whose pages I read carefully from beginning to end and from which I derive much that is informative and still more that is of great help in my many problems.

I have some ideas on the role of biochemistry in the curriculum of pharmacy which I should like sometime to present in your pages if you will be good enough to open them to me, but I fear that I cannot do this until two or three very pressing things are completed.

HOWARD B. LEWIS,
College of Pharmacy, University of Michigan.

Mrs. Gathercoal and I have been on a trip in the South and East for two weeks and it will be at least ten days more before we get back to Chicago. We have had an important meeting of the American Pharmaceutical Association Laboratory Committee and have visited many of the schools and manufacturing institutions where National Formulary research projects are progressing. The need for extensive and deeper research in connection with the National Formulary and the United States Pharmacopoeia is becoming increasingly evident. The pressure that is being brought to bear by enforcement officials under the new law is going to be very heavy, and the only way that we can meet these demands is to be prepared to answer every question that they can raise.

It is fortunate that the schools of pharmacy made an advance in curriculum building just in time to meet the heavy demands on professional and scientific pharmacy. It is my thought that the curriculum must be still further strengthened if pharmacy is to take its rightful place. I believe the University of Minnesota is a leader in this movement where five-and-six-year curricula are already being developed. Other schools must follow.

EDMUND N. GATHERCOAL,
President, American Pharmaceutical Association.

I appreciate very much, almost beyond words at my command this moment, the attitude of the American Association of Colleges of Pharmacy toward the "Deterioration of Drug Plants and Pharmaceutical Preparations" and the increased interest manifested by the Association in Pharmaco- and Therapy-dynamics.

The second project "Dispensing Pharmacy" is worthy of intensive study. The compounding of medicinal substances implies a knowledge of all the basic pharmaceutical sciences and is the climax of the curriculum.

RUDOLPH H. RAABE,
Ohio Northern University.

NOTES AND NEWS

The attention of the faculties is called to the report of the Committee on Curriculum and Teaching Methods published in this issue of the Journal. The Committee makes certain recommendations with reference to what it feels should be the minimal requirements for admission to the first year class in pharmacy.

Attention is also called to the fact that the committee appointed in 1937 by President Crockett for the purpose of making a study of the Constitution and By-laws of the Association in order to bring them into conformity with the standards of accreditment of colleges of pharmacy adopted by the American Council on Pharmaceutical Education, made a report at the Minneapolis meeting. Since this report was printed in its entirety in the July 1938 number of the Journal (pages 423-430), it was thought unnecessary to reprint it in this issue.

President Serles has made the following appointments of delegates to the House of Delegates of the American Pharmaceutical Association: —J. Grover Beard (voting delegate), Hugh C. Muldoon, E. Fullerton Cook.

Dr. James Madison Dille has been added to the membership of the Committee on Curriculum and Teaching Methods.

On December 1, the Medical College of Virginia celebrated Founders' Day marking the one hundred first anniversary of its founding. Mr. Virginius Dabney, Editor of the Richmond Times-Dispatch, spoke on "Medicine in a Changing World." The School of Pharmacy of the Medical College of Virginia reports an increase in enrollment of ten per cent over last year. Mr. Eldon Roberts, Jr., has been appointed instructor in pharmacy and chief pharmacist in the hospital pharmacy. Mr. R. D. Hughes, a graduate of the United States Naval Academy who has completed the work for the doctorate degree at Columbia has been appointed to an instructorship in the biological sciences. Dr. J. A. Reese, who has been on leave doing graduate work at the University of Florida, has returned to the department with the rank of assistant professor. The new men's dormitory has been completed. It houses students from the colleges of pharmacy, dentistry and medicine. All America will be glad to know Dr. W. G. Crockett, after a long illness has recovered and is again at his work.

For the third consecutive year, Wayne University, College of Pharmacy and the Detroit Retail Druggists' Association is sponsoring a continuation course intended to keep the druggists informed with the advances in scientific fields that concern them in their work. The lectures began in November 1938 and will continue monthly through March 1939.

The Philadelphia College of Pharmacy and Sciences has planned a three day seminar for pharmacists who wish to keep in touch with late trends in the pharmaceutical sciences. The dates set are from January 30 to February 1, 1939. President William Krusen on November 25, addressed a radio audience under the auspices of the United Business Men's Association, on the subject of professional and

human relationships. Colonel Samuel P. Wetherill, Chairman of the board of trustees spoke before the student body on December 14, to the subject "Is Representative Government the Hope of Humanity?" Dr. William T. Ellis, the well known war correspondent, spoke before the student assembly on November 7, to the subject "America's Place in World Affairs."

Frederick A. Fuhrman, a 1937 graduate of the Oregon State College, School of Pharmacy, who is now completing work for the degree of Master of Science, has been recommended by the Oregon State Rhodes scholarship committee to represent the College in competition with other Oregon college and university students at Portland. Earl A. Whitehouuse, a 1934 graduate, has been appointed sales representative for E. R. Squibb and Sons, with headquarters in Walla Walla, Washington. Mr. Whitehouse made an outstanding scholastic record; he is a member of Rho Chi, national pharmaceutical honorary, and during his senior year acted as assistant in the School of Pharmacy. Immediately upon receiving the appointment, Mr. Whitehouse left for New York City where he attended a six weeks period of intensive training.

Dr. M. W. Green addressed the Evening School Chemists Club at the University of Cincinnati on November 19, his subject being "Vitamins Today". An attempt was made to point out the modern views of the intimate function of the vitamins and to relieve the literature of some of the chaff.

Mr. Donald T. Meredith, who has recently been doing graduate work at Purdue University, has joined the staff of the College of Pharmacy, Detroit Institute of Technology. His field is manufacturing pharmacy.

The death of Dr. Theodore A. Fischer, pastor of the Church of the Messiah at New Haven, Connecticut is announced. Dr. Fisher was a trustee of the Connecticut College of Pharmacy, he contributed to the spiritual welfare of the students in many ways and last year contributed a substantial sum of money which made possible the enlargement of the pharmacy library. Another trustee, Dr. George Bolles of Danbury, Connecticut, has made a gift of fifty dollars to be used for the school library.

William Hadley and William R. Lloyd, 1938 graduates respectively of Ohio State University and the University of North Carolina are graduate assistants in the College of Pharmacy, University of Minnesota. Professor Charles V. Netz recently gave a talk upon the "Chemistry of Cosmetics" before five hundred members of the Home Economic Section of the Minnesota Educational Association. Dr. Glenn L. Jenkins recently gave a lecture upon "Professional Pharmacy" before the Interprofessional Mens Club of St. Paul. Professor Gustav Bachman is serving as a member of the Minnesota State Board of Health. The Third Pharmaceutical Institute offered to pharmacists of the northwest by the University of Minnesota will be held February 6 to 9, 1939 in the Center for Continuation Study. The curriculum includes lectures and demonstrations by the members of the staff of the College of Pharmacy and the Schools of Business and of Medicine. Dean R. A. Kuever, E. J. Boberg, F. E. Bibbins, O. U. Sisson

and C. W. Harrison (Food and Drug Administration) will participate as special lecturers. A number of scientific motion picture films will augment the program. Instructor C. E. Smyithe of the pharmacy staff has been confined to his home for some months by illness.

A unique Pharmacy Week window display was set up at Fordham College of Pharmacy by Dr. O. F. A. Canis. The display showed some of the medicinal products obtained from the destructive distillation of coal. Samples of such drugs as saccharin, acetanalid, antipyrine, aspirin, phenolphthalein and trinitrophenol were shown, together with charts explaining the structural formula, the common name and use of each drug. Dr. Leonard J. Piccoli, of Fordham University, College of Pharmacy, has been elected the first president of the newly organized society, the American Association for the Advancement of Professional Pharmacy.

Honoring Dr. Henry C. Christensen, for twenty-five years of service as Secretary of the National Association of Boards of Pharmacy, the New York Branch of the American Pharmaceutical Association gave a dinner at the Hotel Pennsylvania, New York City on November 30. He was presented with the 1938 Remington Honor Medal for his distinguished contributions for the betterment of pharmacy.

The United Provinces Pharmaceutical Association, Benares Hindu University, has decided to publish a quarterly journal under the name of "The Indian Journal of Pharmacy" from January 1939. Benares Hindu University is the pioneer institution which has established a degree course in pharmacy leading to the bachelor's degree and the Indian Journal of Pharmacy will be the first journal to be published in India on this subject. Mr. M. L. Schroff of the Department of Pharmaceutics of Benares Hindu University is the Editor of the new journal.

During National Pharmacy Week, Dean W. F. Sudro, Division of Pharmacy, South Dakota State College, broadcasted from Fargo concerning pharmacy and pharmacies. He also has given illustrated lectures upon marihuana before a number of local clubs. At the annual home coming parade, the North Dakota Pharmacy Club's float on the theme, "Pharmacy Serves the State", won second prize. The Club also sponsored a National Pharmacy Week window in a down town store with the theme, "Pharmacy's Service to the Public".

By arrangement between the School of Pharmacy and Temple University and Temple University Hospital, a graduate of the School of Pharmacy will regularly be appointed as an intern in the hospital for the purpose of becoming proficient in hospital pharmaceutical practice and management. Mr. Lee Wolfe is the first appointee. In connection with the course in hospital pharmacy, all senior students earn one semester hour of credit in practical work in the Hospital Pharmacy.

Dr. Harald G. O. Holck, Associate Professor of Pharmacology of the College of Pharmacy of the University of Nebraska has been given a grant by the American Medical Association to enable his school to participate in the nation-wide study concerning the possible effects of aging upon digitalis. Dr. Holck has also accepted an invitation to contribute a chapter on drugs to the book "The Rat in

Physiologic Experimentation" which is being prepared under the joint editorship of Dr. J. Q. Griffith and Dr. E. J. Farris of the Wistar Institute of Anatomy and Biology.

Mr. Maynard W. Quimby, who has been doing graduate work at Cornell, has been appointed an instructor in botany and pharmacognosy at the Massachusetts College of Pharmacy.

A grant has been made by the American Medical Association to Dr. James M. Dille, Department of Pharmacology, College of Pharmacy, University of Washington, to further studies being made there on the post-convulsive effects of some of the analeptics.

According to Science, the Hall of Pharmacy at the New York World's Fair of 1939, constructed at the cost of $1,000,000, was dedicated on the afternoon of Sunday, November 13. The hall occupies 45,000 square feet of space, sufficient to accommodate several score exhibitors.

Professor Leslie B. Barrett, Connecticut College of Pharmacy, was guest speaker at a recent annual convention of the Connecticut Pedic Association. His subject, External Medication, was given during the scientific meeting of chirapodists and podiatrists. Ernest Huber of Bridgeport, has established a scholarship covering one full year's tuition. The scholarship is open to students from Bridgeport and vicinity. With the beginning of the second semester the College will sponsor a series of fifteen special lectures by specialists on subjects relating to pharmacy as part of the regular work for junior and senior students.

Professor A. H. Clark, head of the Chemistry Department of the University of Illinois College of Pharmacy has been appointed Acting Dean of the College following the death of Dean W. B. Day. The Board of Trustees of the University has decided to evacuate the buildings occupied by the College of Pharmacy. The old buildings were found to be unsafe. The Physical Plant Department has made a survey of the available space in the new Dental and Medical buildings and find that the College of Pharmacy can be satisfactorily housed in these buildings. The new pharmacy building will be used as a Chicago Union Building for the use of the professional colleges of the University. Two of the old buildings will be demolished and the third will be occupied by the Physical Plant Department.

Dr. George R. Jones, a recent graduate of the University of Florida, is now an instructor at the University of Washington, College of Pharmacy. The Women's Auxiliary of the Washington State Pharmaceutical Association has purchased a neon sign for the school's demonstration pharmacy.

Mr. W. E. Heine of Purdue had a marihuana exhibit at the October meeting of the Indiana Medical Association and Dr. C. J. Zufall discussed the identification and the action of the plant and its principle at the school of instruction for Indiana state police. Dean Jordan and Doctors Lee and Zufall went on the air during National Pharmacy Week as a part of the program of Purdue's "Apothecary" hour.

MISCELLANEOUS ITEMS OF INTEREST

MEMORIALS

EARL BALDWIN McKINLEY

AN APPRECIATION

In the sudden death of Dean E. B. McKinley of George Washington Medical School many fields of science suffered a great loss. The editorial written for this Journal and published in the October number expresses in admirable fashion, if briefly, the relations that McKinley had to medicine in general and to the general work of the American Association of Colleges of Pharmacy.

No one who came in personal contact with Dean McKinley failed to be deeply impressed by his breadth of view and the range and variety of work with which he was effectively and sympathetically connected. This is vividly shown by the numerous tributes to his activities which have appeared. One may be quoted in part. In *Science* the distinguished psychologist and scientific editor, Dr. James McKeen Cattell, has voiced this sentiment admirably in his comment on the relations of McKinley to the work of our greatest national scientific organization, the American Association for the Advancement of Science; referring to publications of the Association Cattell wrote recently:

> "The undertaking will be much more difficult without McKinley, who was admirably fitted for the editorship of a journal such as *The Scientific Monthly*. His loss with the ill-fated Hawaiian Clipper, while collecting germs in the upper air for his studies on the distribution of disease, was a disaster to science the magnitude of which can only be appreciated by those who have worked with him. He was dean of the Medical School of the George Washington University and was engaged in scientific work of originality and importance. In addition to these engagements he devoted a considerable part of his time and unlimited energy to scientific organization. In recent years he has taken a leading part in the work of the American Association for the Advancement of Science and for it his loss is irreparable. As one of the editors of *The Scientific Monthly* he would surely have had the usefulness and the success that attended all his enterprises. McKinley had genius for scientific research, organization and administration; most of all, for friendship. There is none like him, none, nor will be."

Since his election as a member of the executive committee, McKinley had been a leader in the creative activity of the Association in many lines. The series of symposia on various topics in scientific medicine which has been carried out during the last half dozen years owes its inception to McKinley's suggestions and its organization to his analysis of the problems, his success in winning the support of the best men in the country for participation in the programs, and his helpfulness in aiding the development of the ideas from the start to the consummation of the enterprise.

When it was suggested that the scientific aspects and interests of pharmacy were sufficiently active and important to justify the establishment of a group under the leadership of the American Association for the Advancement of Science in order to strengthen the scientific movement in that field, he emphasized the significance of the movement and was from the very start a strong supporter of the proposal and an effective aid in formulating and carrying out the plan. The long recognized existence in the field of commercial pharmacy of tendencies that ran counter to scientific ideals and principles had led some to question the existence of any intimate connection and to fear the obstacles in the way of developing this movement in line with the general policies of the Association. McKinley did not share this view and found adequate reasons to justify setting aside the objections that had been raised.

As a matter of history, his first academic appointment to the faculty of the University of Michigan came while he was still registered in the College of Medicine; this post was in the field of physiological chemistry where he was thus early in contact with the development of the new pharmacy and the value of chemical discoveries for workers in the field of medicine. At a time when this activity was only just taking its first steps in a now widely extended field, he saw distinctly at once the possibilities and the dangers that confronted the preparation of new compounds and their introduction in the treatment of disease. Always uncompromisingly critical of commercialism in pharmacy as in medicine, he never failed to appreciate and to emphasize this danger in his discussions and to encourage in his official relations the development of the scientific side of the problem, the importance of careful analysis through experimentation, and the value of demonstrated achievement in this field. While his breadth of vision and clear appreciation of future values was conspicuous, he kept his vision of future possibilities under good scientific control. He was throughout a man of high ideals and in this field as elsewhere his ideals served as an effective guard and guide for the inspiring enthusiasm which he put into every effort.

It is too soon to say—but a short four months since he was suddenly removed from our circle—to write in detail an adequate estimate of his services in any field. But scientific pharmacy has done wisely in recognizing its indebtedness to Earl Baldwin McKinley for his appreciation of the importance of the work, his conception of its immediate relation to scientific medicine and its proper association with other fields of scientific inquiry under the general organization of the American Association for the Advancement of Science.

Henry Baldwin Ward,
University of Illinois.

WILLIAM BAKER DAY
1871-1938

William Baker Day died at his home, 418 North Taylor Avenue, Oak Park, Illinois on Saturday, December 10, 1938. Dean Day was

born on February 15, 1871 at Peru, Illinois, the son of Minthorn M. and Caroline Mary Stockdale Day. He received his early education in the public schools of Peru, Wheaton and Chicago, enrolling in the Chicago College of Pharmacy in 1888 and graduating therefrom in 1892 with the degree of Ph.G. He joined the faculty of the College becoming assistant to the late Professor Edson S. Bastin, and succeeding him as Professor of Botany in 1898. Soon after joining the faculty Professor Day became actuary of the Chicago College of Pharmacy continuing in that capacity with its successor, The University of Illinois College of Pharmacy. From 1897 to 1913 he also served as secretary of the faculty, becoming acting dean in 1913 in which capacity he served until 1919 when he became dean of an institution which he lived to see become an outstanding college of pharmacy.

In 1896 Professor Day married Bertha P. Quinn. Two children were born to this union, Helen May and Charlotte, now Mrs. Ivan D. Carsen, both of Washington, D. C. Mrs. Bertha Day died in 1916. In 1920 Dean Day married Marietta Carothers of Ansley, Nebraska. He is survived by his widow, Mrs. Marietta Day, his daughters and one grandchild, Barbara Carsen.

William Baker Day was Professor of Botany from 1898 to 1913 and Professor of Materia Medica and Botany sinec 1913. He is the author of "Introduction to Plant Histology" (1908) and "A Revision of Bastin's College Botany" (1920-1937) In addition he has contributed many articles to pharmaceutical journals and other publications. He was a member of many scientific societies and was particularly active in local and national pharmaceutical affairs. For thirty years, from 1906 to 1936, he was Secretary of the Illinois Pharmaceutical Association, becoming honorary president upon retirement from the secretaryship. He was President of the American Pharmaceutical Association in 1912-1913, and General Secretary from 1914 to 1925. He was Secretary of the Board of Trustees of the United States Pharmacopoeia for several years. Dean Day was also a member of the American Association for the Advancement of Science, The Chicago Retail Druggists' Association, the Chicago Veteran Druggists' Association, the Illinois State Academy of Science, Kappa Psi Fraternity, Honorary Member of Delta Kappa Sigma Fraternity and honorary member of The Rho Chi Society.

Those who knew him at the annual meetings of the Association will remember his warm, sympathetic smile, his radiating personality, his prudence and foresight, his sincere attitude, his demoncratic nature and his fraternal spirit. We, who knew him as a colleague and teacher, knew him to be thoroughly devoted to his profession, faculty, students and friends. His office was never closed to a student of the school or to a pharmacist from the outside. He was friend and counsellor to everyone. William Baker Day, the gentleman, the scholar, the teacher, the scientist has left a record that cannot fade in the hearts of his fellow-men. His passing leaves a gap in the ranks of pharmacy that will be difficult to fill. May God rest his soul in peace.

Elmer H. Wirth.

Progress and Proposed Plans of the Committee On the Study of the Deterioration of Drugs and Pharmaceuticals

The inception of this proposed study of the deterioration of drugs and pharmaceutical preparations is described in the report of the Problems and Plans Committee of the American Association of Colleges of Pharmacy for 1937 and 1938. (Jr. of Pharm. Ed. *1* 484, 1937; *2*, 579, 1938.) This Committee, seeing the value of such a study and believing that it could best be carried on under the auspices of the Association with the aid and cooperation of the colleges of pharmacy, proceeded to set up the machinery for the study. This consisted of the appointment of a chairman and a committee to plan and coordinate the study. At the present time this has been done and this paper is intended to be a report by this committee of its organization and the general plan which it proposes to follow in the pursuance of this project.

The general planning and supervision of this project is in the hands of a committee consisting of a chairman and three members which have been appointed by the Problems and Plans Committee of the American Association of Colleges of Pharmacy. The personnel of this committee is as follows: Mr. Francis E. Bibbins of Eli Lilly and Company, Dr. Joseph B. Burt of the College of Pharmacy of the University of Nebraska, Dr. Robert L. Swain of the Maryland Board of Pharmacy, and Dr. James M. Dille of the College of Pharmacy of the University of Washington, chairman. An attempt has been made to secure representation from each of the fields of legal, manufacturing, and educational pharmacy. The committee will, however, welcome suggestions from anyone, it being desirous of making this study as universally useful as possible.

SCOPE

To be of the greatest benefit a study of the deterioration of drugs must take into consideration all of the conditions to which drugs are subjected from the time of their production until their ultimate consumption. These conditions fall into two groups, processing and storage. In the former deterioration might occur in a manufacturing process such as sterilization, in the second, deterioration might occur from exposure to air, light, or heat. It is unquestionably of practical importance to know the conditions of processing and storage which will prevent deterioration of the pharmacologically potent principles, but such a study should also give considerable attention to the actual changes, in so far as they can be determined, which take place when a drug deteriorates. This is, of course, principally of theoretical interest, but unless some consideration is given it, our knowledge of this field will be empirical and sound progress cannot be made. This information when compiled, correlated and verified or extended by experiments should then furnish a basis for suggestions and recommen-

dations by this committee for retarding or preventing deterioration; or, if deterioration cannot be prevented, stating a time limit after which a drug should be discarded.

Therefore this committee proposes to include in this project (1) a study of the effect which processes of manufacture might have on the potency of the drug; (2) a study of the effect of conditions of storage on the potency of the drug; (3) a study of the changes which take place as deterioration occurs; (4) recommendations for preventing or retarding deterioration; (5) and, if deterioration cannot be prevented, recommendations of the length of time a preparation may be stored before it should be discarded.

GENERAL PLAN

The project has been divided into four separate steps. These are as follows:

I. Delineation of the field
II. Survey and digest of the literature
III. Experimental work
IV. Publication

I. Delineation of the field.

It is important that the time and energy expended in a study such as this be directed toward securing useful results. Hence only those drugs and preparations which are of general clinical use should be selected for study. After selection they will be grouped in such a way as to facilitate a study of the literature. At the present time the committee is at work on this part of the project and it is hoped that when this is completed, the selection can be published for general suggestions and comments by those interested. These selections will be grouped in such a way as to facilitate the survey of the literature, but later a classification based on pharmaceutical similarity will probably be more useful.

II. The survey and digest of the literature.

1. **The literature search.** After the division of the selected drugs into workable groups it will be necessary to seek aid from those most qualified in the various fields. This will be done by the appointment of subcommittees. Members of the general committee may serve on the subcommittees. It is hoped that the division will be made in such a manner that each will be assigned to a small, clearly-defined group of drugs or even a single drug so that there will be no great burden on any one individual. Some plan will be devised to aid the subcommittees in gathering this data and presenting their findings. This might be a mimeographed form which would include such items as test used for the drug, conditions of processing or storage to which the drug was subjected, and so forth.

2. **Correlation of the literature findings.** Upon completion of the literature survey by the subcommittees, the data will be correlated and organized by the general committee. Summaries should be compiled and a critical evaluation of the literature findings made. These will then be made available in mimeograph form and will be presented to the chairman of the Problems and Plans Committee for distribution

to those interested in the results of this work. It is hoped that this mimeographed report will represent the best and most complete survey possible of the field at the time of its publication, and will be definitely useful to pharmacists and manufacturers.

III. Experimental work.

There will no doubt be contradictions and discrepancies found in the literature search which need elucidation by further experiment. The committee shall then plan and supervise experiments which will answer these questions in such a way as to furnish dependable and reliable data This undertaking will no doubt extend over a long period of time and so the importance of sound planning in the beginning cannot be overemphasized This work should be carried on by various laboratories in schools and drug firms. It is probable that financial assistance will be needed in various instances.

IV. Publication.

When the information both from the literature and experimental work has accumulated sufficiently to furnish as nearly as possible absolute information in this field the results should be publicized in some form. This might take the form of a volume titled "The Deterioration of Drugs and Pharmaceuticals." It should contain abstracts of original papers, a critical evaluation of them, reports of work done by and under the direction of this committee and a definite conclusion regarding deterioration under various conditions, with recommendations for its control or prevention based on the accumulated evidence. It is possible that the publication of this volume would prove financially attractive enough to interest a publishing house. During the experimental work and until the time of publication the mimeographed survey of the literature as described in "II" will be of unquestionable value.

James M. Dille, Chairman
University of Washington.

The Problems and Plans Committee Study of Dispensing Pharmacy

The Problems and Plans Committee of the American Association of Colleges of Pharmacy is endeavoring to find out how dispensing pharmacy is taught in America. Its reasons are twofold. First, such knowledge will be invaluable to the men actually giving instruction in the field. A nationwide comparison of one's special activities is almost mandatory to truly successful teaching. The worth of intelligent and comprehensive understanding of what one's contemporaries in the field are doing is so obvious that it is trite to mention it. Second, the information is greatly needed by the Syllabus Committee now charged by the American Council on Pharmaceutical Education with the very real responsibility of unifying the teaching in our profession. The new Syllabus will, by direction of the Council, become a truly vital factor in pharmaceutical pedagogy. To exercise this function smoothly it

must be constructed in cooperation with everyone influenced directly by its monographs. May we have the cooperation of all interested in this study.

L. Wait Rising, University of Washington.

The George-Dean Act and Adult Vocational Education

Through Secretary E. F. Kelly there has been distributed to all schools and colleges of pharmacy, to the secretaries of the state pharmaceutical associations and to the boards of pharmacy, a bulletin entitled "Organization and Administration, Distributive Education" which is issued by the office of Education of the United States Department of the Interior. The bulletin gives the text of the George-Dean Act of 1936 which made the funds available and describes the objective, kinds of training, amount and distribution of funds and methods of organization and administration. In a word, the Act provides for adult vocational education for workers in the distributive occupations. When applied to the drug industry, the following groups of persons are entitled to the privileges provided by this Act.

1. Pharmacists, either owners, managers, or assistants, to receive training which will enable them to more effectively serve customers and to lower costs in the distribution of drugs, medicines, medical supplies and related items.

2. Employees (non-pharmacists) who distribute related merchandise such as fountain products, paper, candy, tobacco, etc. This training must not include professional education, nor subjects of college grade acceptable towards a degree, either undergraduate or graduate.

A second bulletin "The Wisconsin Plan" has also been distributed. This bulletin describes the application of the plan to a concrete case. The plan was worked out by Mr. Sylvester H. Dretzka, Secretary of the Board of Pharmacy, under the direction of the Wisconsin State Board of Vocational and Adult Education and with the cooperation of the State Board of Pharmacy and the State Pharmaceutical Association. The instruction is arranged and given by Mr. Edwin J. Boberg, President of the Board. This job has been well done and is invaluable to any group desiring to undertake the work since every detail from the individual to approach in setting up the plan to the organization of subject matter and conduct of classes is given.

The Wisconsin Plan need not be followed in its entirety. Local desires and needs call for modifications, but the Wisconsin group deserves much credit in working out a program that is producing satisfactory results. An appropriation for vocational education under the George-Dean Act has been made for each state. The Wisconsin Plan gives you the technique of how to proceed to obtain a share for the instruction in your state of pharmacists in distributive education. It is most fitting that this type of education should be sponsored and carried out by the boards of pharmacy in cooperation with state and local groups in the respective states. The faculties of the schools of pharmacy stand ready

to give assistance in any way where those in charge of vocational work feel they can render service.

Rufus A. Lyman.

The Pharmaceutical Syllabus and the Fifth Revision

The present Executive Committee consisting of Glenn L. Jenkins, Eldin V. Lynn, Rufus A. Lyman, Robert L. Swain and the Chairman has had under consideration a list of subjects which are deemed of sufficient value in a pharmaceutical curriculum as to be required in the coming revision of the Syllabus. This list is to be submitted to the entire Syllabus Committee, to the American Council on Pharmaceutical Education and to others for criticism and suggestions before final adoption.

New additions to committees include Richard A. Deno representing the American Pharmaceutical Association on the General Syllabus Committee for a term of seven years and Elmer M. Plein on the Subcommittee on Dispensing Pharmacy.

Henry M. Burlage, Chairman.

The Annual Convention of the Society of Rho Chi

The Rho Chi Society (Pharmaceutical Honorary Society) held its annual convention in Minneapolis, August 23, 1938. There were 128 members and guests present at the annual dinner, at which Dean Emeritus Wilbur J. Teeters of the University of Iowa, was the speaker. The convention was convened immediately following the dinner by Dr. Henry M. Burlage, president. Reports of the activities of the twenty-two chapters were read and discussed. $200 was added to the Cumulative Research Fund which now totals $1,016. Contributions to this fund will be gratefully received from individuals and organizations. Professor Zada M. Cooper of the University of Iowa was installed as National President to serve for 1938-1940. Dr. B. V. Christensen of the University of Florida was installed National Vice-President. New council members are Dean W. F. Sudro of North Dakota State College and Leroy D. Edwards of Western Reserve University.

Loyd E. Harris, Secretary.

Pharmacy Week from the Students' Viewpoint

This year Pharmacy Week was officially announced to take place from October seventeenth to October twenty-second. For years, those

interested in furthering the professional aspects of pharmacy have campaigned for a universal establishment among practicing pharmacists, a week of concentration on professional display before the public.

The effort and purpose of this week was to be the enlightenment of the public as to the professional duties of the pharmacist, the importance of his trust, and the scope of his training. It would seem, therefore, that every pharmacist, even if for personal reasons alone, should have had the initiative and desire to participate and cooperate in this program.

However, from the observations that we were able to make this did not occur. Indeed we must admit that the general showing of our pharmacists was very poor. One of the members of our staff reports, that within a radius of one mile from his home there are about fifteen pharmacies. Of these, there were only five that had any professional display. Your reporter in travelling to and from school, daily, passes by about ten pharmacies. None of these had any professional display whatsoever. Reports heard among students at school have been equally as disappointing. A large number reported that their employers would not give up any time to a professional display.

We are going to criticise these students. Employers cannot easily be persuaded to increase salaries, nor to decrease hours, but they can be persuaded to accept work and interest in promoting the appreciation of the prescription department by the public. If, as students, these people failed to possess the spirit and enthusiasm of professional pride, we cannot see how on earth it can come to them later, when they will be under the pressure of economic struggle.

As for our state and city associations, it seems that they have become obsessed with commercialism and "fair" trade. Their support of Pharmacy Week was so poor that we can hardly agree upon calling them pharmaceutical associations. They seem to have degraded into mere trade associations. Our own Alumni Association was inexcusably dormant.

If we believe that pharmacy is a profession we are certainly not showing it. Our support of professional activities in pharmacy must be greater in capacity and scope. At this point in today's status of pharmacy we must choose between scientific professionalism or commercialism. Upon that decision, and that decision alone, does pharmacy depend.—Reprinted from The Pharma-Conn, Connecticut College of Pharmacy.

The Seventh Educational Conference

The Seventh Educational Conference was held at the Hotel Roosevelt, New York City, in October, 1938. It is impossible to comment even briefly upon all the papers presented. The high light of the meeting was the presentation of a paper by Professor Ben D. Wood of Columbia University, who is Director of the Cooperative Test Service and the Educational Records Bureau.

Dr. Wood's paper was received in such a manner as to indicate that his extensive contributions to this field of endeavor are adequately

appreciated and that his personal popularity has not waned. Seldom does one see a finer example of devoted loyalty to a worthy cause than has been shown by Ben Wood in this field for many years.

It was he, more than any other one person, who was responsible for the starting of these conferences. During all this time he has attempted to keep very definitely in the background. He has asked only the privilege of contributing as effectively as possible to the good of the cause and has proven modest and self-effacing at all times. This unusual feeling of personal regard for Dr. Wood, coupled with sincere and profound appreciation of his paper, called forth a response from his colleagues which could not fail to bring joy to the heart of any man. His talk was designed to bring out the need for comparable measurements in any attempt to individualize education. He based his whole presentation on the generally accepted premise that every student should, so far as existing conditions permit, be offered the type of instruction which best suits his individual needs and such education as he may be capable of acquiring, whatever that grade of education may be.

If we accept this premise, it at once becomes clear that there is a dual responsibility resting upon every teacher; that of diagnosis and that of teaching. The school itself determines the limits of the curriculum, but the teacher is responsible for an accurate diagnosis of individual student needs, as well as the formulation of a prescription outlining how each student may be most effectively taught. A good teacher should also exhaust all possibilities of helping each student to become as useful and reliable a citizen as his individual capacities will permit. It is, of course, assumed that the objectives back of such endeavor are not solely academic. Economic, moral, social, and other factors must receive proper consideration if worthy accomplishments are to follow.

Dr. Wood discussed briefly four basic assumptions upon which comparable tests and measurements are based:

1. That the various branches of knowledge, no matter how varied or overlapping they may be, are possessed of what may be spoken of as a common core.
2. That this common core can be determined with tolerable accuracy.
3. That more or less definite boundaries can be established for the above-mentioned fields.
4. That certain significant elements of the common core can be measured by objective types of tests.

Dr. Wood presented charted results of comparable tests which illustrated what he referred to as general patterns of students enrolled for different curricula. Some of these charts were rather striking. Students enrolled in journalism e. g. would show a curve beginning very high for English, reading, and language tests, falling off moderately for the general intelligence test and showing definitely poorer results in science and mathematics. Engineering students, on the other hand, obtained much poorer results in the first three tests mentioned, improved so that the two curves intersected about at the point of the general intelligence test, and showed marked superiority in the science and mathematics tests. Such results might be thought of as normal results and indicate, within limits, that the students thus tested may not be badly placed in their various curricula.

Dr. Wood stressed that no tests now available are wholly satisfactory and cautioned against expecting too much of them. He spoke of greatly varying results which have been obtained from the same group of students by the use of different tests, results of which should have theoretically been the same. It would thus seem highly desirable that the relationship existing between different sets of standardized tests be established. It was pointed out that although the perfection of these tests would be greatly speeded up if all schools would give grades on a uniform basis, the wisdom of such procedure may very well be questioned. School grades do and should have a broader meaning than mere educational achievement and that we can continue to use a dual system of marking to considerable advantage. Comparable tests offer results which are of particular use for purposes of certification, whereas the local school marks involving important moral, social, and other factors, such as dependability and cooperation, may prove more appropriate for other purposes. The importance of having service and research go hand in hand in the further development of these tests was indicated. It was also stressed that research in the proper application of tests is equal in importance to the further perfection of the tests themselves.

At the end of Dr. Wood's presentation even the most skeptical had become convinced of the folly of applying mass standards to a heterogeneous group of students and of the need of greater freedom in the development of individualized standards. Even in the field of pugilism it is no longer considered good form to permit a bantam-weight and a heavyweight to compete with each other in the same ring. How long must it be before educators are permitted to display equal intelligence and humanity?

President Butler gave a most brilliant, scholarly address, in which he traced the development of the College Entrance Examination Board and showed how its findings have served as a foundation for the development of the more effective I. Q. tests in all their various ramifications. He sounded a word of warning as to the effect which the rise of dictatorships may have on our American educational system. He ended with a plea for the continuation of our democratic form of government, with its appreciation of the educated man and the contribution which he, as an individual, may be able to make in promoting the general welfare.

Among the mutual friends whom I met at the meetings was Professor Remmers of Purdue University, who has been of such splendid service to Dr. Klemme in his work as Chairman of the American Association of Colleges of Pharmacy Committee on Pharmacy Predictive and Achievement Tests.

I have become thoroughly convinced of the fundamental value of this conference and of the importance of our Association with it. Several people with whom I talked expressed surprise that colleges of pharmacy should be represented at such a meeting. Do not comments of this sort establish the need of continued contact and cooperation on the part of our association in such important educational activities?

ERNEST LITTLE,
Representing the American Association of Colleges of Pharmacy.

Report of the Committee On Endowment of the National Drug Trade Conference

At our December, 1937, meeting, the Committee on Endowment presented a report to the conference which was followed by a rather lengthy and exceedingly helpful discussion.

At the end of our conference, the Resolutions Committee brought in the following recommendation:

"That it be the recommendation of the National Drug Trade Conference that the industries represented therein give serious consideration to providing endowment and research grants for colleges of pharmacy and that constituent members be requested to appoint committees to contact the American Association of Colleges of Pharmacy with a view to placing endowment and research grants to best advantage."

This resolution was adopted by the conference.

The first part of the resolution is merely a broad statement of the objectives which this committee has had before it as its goal for many years. It is probable that every member of the conference would express approval of this part of the recommendation.

The latter part of the resolution indicated what the Resolutions Committee considered to be the best manner of handling such a project. The adoption of the recommendation put the conference on record as favoring such a procedure.

It seems clear to our committee, therefore, that all we can do for the moment, is to urge our constituent members to appoint the committeemen recommended and to offer our full cooperation in helping to carry out whatever project they may see fit to undertake. Any other attitude than this on the part of the Committee on Endowment could be interpreted only as a lack of appreciation of a formally recorded wish of the conference. We, therefore, suggest that our secretary write to each constituent member and request that their committeemen be appointed, in accordance with the resolution adopted in 1937, to represent them in this matter.

Although the responsibilities of the Committee on Endowment are for the moment not clear cut, we strongly recommend that the committee be continued and stand ready to cooperate with the representatives of our constituent members in every possible way. We repeat the sentiment that has so often been expressed in our meetings, a deep sense of regret that manufacturing concerns, which have profited largely as a result of sales through retail pharmacy outlets, should have contributed so little to this branch of education, while, in many instances, contributing heavily to colleges more remotely associated with their industries. Such procedure is illogical and inimical to the best interests of colleges of pharmacy and pharmaceutical industries as well. We shall never be able to make the progress which we all desire until it is brought home to us with great clarity that one hundred per cent coordinated effort from all phases of our profession is a primary prerequisite. Colleges of pharmacy should stand ready to render an ever broadening service to the profession they represent and they, in turn, have a right to expect help, financial and otherwise, from all branches

of our profession. We wish it were possible for us to inspire our industrial colleagues to really profoundly feel their obligation to their colleges and to render them assistance commensurate with the means available for such purposes. The committee also feels that colleges of pharmacy should not overlook the possibility of financial help from the state in which they are located. There is no logical reason why every state in the Union which has a college of pharmacy within its borders should not assist in the maintenance of this branch of education which plays such a vital part in its public health program. Our states generally have passed laws which require applicants for state board of pharmacy examinations to be graduates of approved colleges of pharmacy. We all approve of this requirement, but we also recognize that it places on the state, to an unusual degree, the obligation of maintaining a high quality of pharmaceutical education for those desiring to enter the profession.

In a spirit of fairness we should say that most states recognize this responsibility and adequately measure up to their responsibilities. In some sections, especially in the east and along the Atlantic seaboard, they have shown a tendency to lag behind in this regard. We believe that such conditions are due, not so much to a refusal on the part of our state legislatures to recognize their responsibilities, as to a lack of aggressiveness on the part of our profession. Once the situation is really made clear to them, colleges of pharmacy should have less difficulty in obtaining state aid than schools of chemistry and engineering or many other colleges whose graduates do not render a service as vital to public health and public welfare as do the registered pharmacists. Let us make the most of this possibility. The colleges should themselves assume the initiative and solicit all possible help from the profession in promoting such a campaign.

The Committee on Endowment stands ready to cooperate in every possible way which is in accord with the objectives and avowed purposes of the conference.

Committee on Endowment:
S. B. PENICK,
ERNEST LITTLE, Chairman.

A Request from the Conference of Pharmaceutical Law Enforcement Officials

The Attorney General of Maryland recently rendered an opinion which has an important bearing upon the definition section of the Maryland Pharmacy Act. Inasmuch as many states have pharmacy laws similar to that of Maryland, the Conference feels that the opinion is of sufficient interest to be called to the attention of the secretaries of the boards of pharmacy of the country. The opinion is also of interest to the pharmaceutical teaching profession.

The opinion is the result of a request made of the Attorney General's office by Robert L. Swain of the Maryland Board of Pharmacy and reads in substance as follows: "I shall appreciate your advising this

Board whether the words 'laxatives', 'digestives', and 'tonics', may be used in advertising a store in which certain drugs and medicines are sold, but which is not a pharmacy and is not operated by a registered pharmacist."

The opinion follows:

"You ask to be advised whether a storekeeper, who is not a druggist, may advertise that he sells 'remedies', laxatives, digestives and tonics.

"The controlling statute states that a store shall be considered a pharmacy if it displays or advertises 'drugs, remedies or any word or words of similar or like import.' Code, Article 43, Section 229, 1935 Supplement. The store where this advertisement appears is not a pharmacy, you advise, nor is it in charge of a registered pharmacist.

"You state that the word 'remedy' is defined in the thirteenth edition of the American Medical Dictionary as follows: 'Anything that cures, palliates, or prevents disease.' You further state in your letter that the words 'laxatives', 'digestives' and 'tonics' are all used in the treatment of diseases and are universally classed as remedies by the pharmacy profession.

"Our examination of the statute leads us to agree with you; it is, therefore, our opinion that such words may not be displayed or advertised in connection with a store not a pharmacy."

Charles T. Leviness, 3d,
Assistant Attorney General.

The Conference believes that the enforcement of the state pharmacy acts, in the light of this opinion, will contribute to a more satisfactory observance of the state pharmacy acts and thus make more effective the enforcement of these laws. Will you please send a copy of any opinion rendered by your Attorney General during the year, or any important decision arising under the pharmacy laws to M. N. Ford, Secretary of the Conference, Room G 18, New State Office Building, Columbus, Ohio.

Rufus A. Lyman.

(N2) Report of Sub-Section on Pharmacy at the Richmond Meeting of the American Association for the Advancement of Science

The Section devoted its entire time to the Symposium on Glycols; their chemistry, pharmacology, industrial applications, and pharmaceutical uses. Due to unforeseen circumstances, Doctor F. C. Whitmore was unable to be present to discuss his phase of the subject, namely, The Chemistry of the Glycols.

Doctor H. O. Calvery gave the results of his most comprehensive toxicity tests on these compounds (propylene glycol, diethylene glycol, ethylene glycol, carbitol, dioxide, and cello-solve) in which he used some 2,600 animals. He stressed and demonstrated the need of applying statis-

tical methods to the results of toxicity studies. In his summary he concluded that with the exception of propylene glycol the others should be avoided in food and drug preparations.

Mr. H. B. McClure told of the industrial applications of the glycols in a most interesting manner. Among the uses cited were; as engine coolants, low freeze dynamites, electrolytic condensors, plasticizers, and in textile manufactures.

The pharmaceutical uses of the glycols were discussed by Doctor A. G. DuMez, who gave an extensive review of the literature on this subject. In the discussion, participated in by H. B. Haag and M. G. Mulinos, the desirability of comparing the toxicity of these compounds with some generally known solvent was indicated, as well as the need for studying the factors (age, sex, their chemicals, etc.) which might influence the intensity of the glycol action.

The attendance was very good, and striking in that it stuck, there being little or no moving about during the symposium. This was the first time that an attempt had been made to gather together in a comprehensive fashion all that is known about the glycols, and it is hoped that the papers will be published together so as to give a complete picture.

H. B. Haag.

"From the time the College began I have been interested in your work. I especially regret the tendency of the medical profession to order so much readymade medication that is prepared and sold from the standpoint of commercialism. I like to see each prescription fitted by his physician to the individual patient. Of course I do not object to the wonderful scientific preparations for food and for nutrition that are offered. I do object to the very many combinations in liquids, powders and tablets that are ordered by physicians and handed over the drug store counter by young clerks who are not licensed to put up prescriptions, all to the profit of the maker of the preparation, and too often to the harm of the patient."—From a letter written on January 11, 1939 by Dr. Oliver T. Osborne, Professor Emeritus of Therapeutics, Yale School of Medicine to Dean Henry S. Johnson, Connecticut College of Pharmacy.

New Books

An error was made in the review of the TEXTBOOK OF PHARMACEUTICAL BOTANY by Youngken. The P. Blakiston's Son and Company, Inc., published in the October issue. The price is $4.75 instead of $7.00. The latter figure is the price of a TEXTBOOK OF PHARMACOGNOSY by the same author.

The following three reviews of pharmaceutical texts and monographs have appeared in other journals. They are reprinted here because the Editor feels it is good for us to see what others think of some of the current pharmaceutical literature. He himself was especially interested in what a medical reviewer might say about Dr. E. V. Lynn's Pharmaceutical Therapeutics with Pharmacology. All pharmacists who

fear that the teaching of pharmacology to pharmacy students will bring down the wrath of the medical profession upon us should take note that the medical reviewer of this book has nothing but commendation for it.

Rufus A. Lyman.

PHARMACEUTICAL THERAPEUTICS WITH PHARMACOLOGY, POSOLOGY AND TOXICOLOGY by Eldin V. Lynn, Ph. D., Professor of Chemistry, Massachusetts College of Pharmacy, Boston. Second edition. Cloth. Price $4.00. 430 pages. New York & London: McGraw-Hill Book Company, Inc. 1938.

The object of this book is to present for students and practitioners of pharmacy the essential facts of pharmacology, toxicology and therapeutics of all drugs appearing in the United States Pharmacopoeia, the National Formulary and New and Nonofficial Remedies (unfortunately abbreviated throughout as N. R. instead of N. N. R.); a few drugs not appearing in any of these publications are also included. The task is accomplished most admirably, and it would seem that in its new edition this work would be practically indispensable to the pharmacist studiously interested in the practice of his venerable and important profession.

(From the Journal of the American Medical Association, Aug. 20, 1938)

A TEXT-BOOK OF PHARMACEUTICS by Arthur Owen Bentley, Reader in Pharmaceutics and Head of the School of Pharmacy in the University College of Nottingham, and others. Fourth edition. Cloth. Price $5.00. 1,001 pages. 234 illustrations. Baltimore: William Wood & Company, 1937.

This is a book on the practice of pharmacy in accordance with the Addendum (1936) to the British Pharmacopoeia and the British Pharmaceutical Codex of 1934; and it incorporates, as the author states, the recent advances in pharmaceutical education as is evidenced by such chapters as the ones on osmotic centration, absorption, viscosity determinations, the colloidal state, and the theory of emulsions. The first part of the book discusses the political history of pharmacy in Great Britain. Part 2 takes up general principles and apparatus; part 3, dispensing; part 4, pharmaceutical preparations. In part 5, under the heading of pharmaceutical biology, are taken up the matters of bacteriology, sterilization, preparation of solutions for parenteral administration, vaccines and serums. Part 6 discusses briefly the principle of biologic assay of pharmaceutical preparations. There are a good many items in this book that might with advantage be incorporated in the current pharmaceutical education in this country; (They are. On this point the reviewer is not posted—Editor) and for this reason the book is recommended to pharmaceutical libraries, teachers of pharmacy and practicing pharmacists who wish to keep abreast with the trend of pharmaceutical progress in the British Empire. (From the Journal of the American Medical Association, August 20, 1938)

ACONITE—COMMITTEE ON MONOGRAPHS, AMERICAN PHARMACEUTICAL ASSOCIATION — AMERICAN PHARMACEUTICAL ASSOCIATION, 259 pages, illus., price $2.00.

First of a projected series on drugs and chemicals of pharmaceutical importance, in which treatment will be given to all aspects: botanical, chemical, pharmacognostical, pharmaceutical, pharmacological, bacteriological, and clinical. If the series is continued on the plane of this initial monograph, it will be invaluable to the profession. (From the Science News Letter, July 2, 1938.)

CHEMISTRY IN RELATION TO BIOLOGY AND MEDICINE WITH ESPECIAL REFERENCE TO INSULIN. OTHER HORMONES. The Willard Gibbs Lecture by John Jacob Abel. 1939. 79 pages. The Williams and Wilkins Company, Waverly Press, Inc.

In addition to the lecture indicated in the title, this elegantly made little book contains a photograph and a brief biography of the distinguished teacher, author and investigator. A limited edition of 825 copies was printed as a memorial of the early stimulus he gave to the activities of the Williams and Wilkins Company in science publishing. The entire edition has been placed in the hands of those individuals that the publishers thought would most likely to be appreciative. It was a gracious act on the part of the publishers to commemorate Doctor Abel and his service in this way.

LITTLE JOURNEYS TO THE HOMES OF GREAT PHYSICIANS by C. V. Mosby, M. D., 1937. 66 pages. 3 photographs. The C. V. Mosby Company.

This beautiful little book entertainingly and almost affectionately written by Doctor Mosby, is a tribute to the memory of three great physicians, William Beaumont, physiologist, Augustus Charles Bernays, surgeon, and William McKim Marriott, pediatrician. One cannot read the book without a longing that many men would make such a contribution to our literature. To any student of the medical sciences the book would bring inspiration and build a professional morale. The book is distributed free by Doctor Mosby to anyone who may write to him for it.

CLINICAL LABORATORY METHODS AND DIAGNOSIS by R. B. H. Gradwohl, M. D., Director of the Gradwohl Laboratories and Gradwohl School of Laboratory Technique; Formerly Director of Laboratories, St. Louis County Hospital; Pathologist to Christian Hospital; Director Research Laboratory, St. Louis Metropolitan Police Department; Commander, Medical Corps, Fleet, United States Naval Reserve. 1938. 1607 pages. 492 illustrations. 44 colored plates. The C. V. Mosby Company. Price $12.50.

The size of this edition shows an increase of 600 pages over the first. In revising the author has eliminated the errors in the first and also tests which have served their usefulness and there has been added many improved ones which have been developed recently in the field of clinical pathology. Specific items of improvement are to be found in the description of the newer concepts of nephritis and nephrosis, amplification of the chapter on blood chemistry and on hemotology and the rewriting of the chapter on helminthology and the discussion on tropical diseases. A new chapter on the detection of crime by laboratory methods has been added. A comprehensive treatise.

THE LIVING BODY by Charles Herbert Best, M. A., M. D., D. Sc. (Lond.), F. R. S., F. R. C. P. (Canada), Professor and Head of Department of Physiology, Associate Director in the Banting-Best Department of Medical Research, University of Toronto and Norman Burke Taylor, M. D., F. R. S. (Canada), F. R. C. S. (Edin.), T. R. C. P. (Canada), M. R. C. S. (Eng.), L. R. C. P. (Lond.), Professor of Physiology, University of Toronto. 1938. 563 pages. 283 illustrations. 27 colored plates. Henry Holt and Company. Price $3.60.

The book was written for the usual course given on the college level and students of nursing, dentistry and agriculture. Such a book is of value to students of pharmacy and medicine in that it is easy reading and gives one a bird's-eye view of physiology before he attempts the more comprehensive texts. Such books should be found in our libraries for collateral reading.

ANIMALS WITHOUT BACKBONES by Ralph Buchsbaum, Department of Zoology, The University of Chicago. 1938. 371 pages. Profusely illustrated. Price $3.75.

An introduction to the invertebrates stressing principles rather than morphology and intended for invertebrate courses on the college level. The material is divided into indispensable chapters which deal with the more general and elementary aspects of each phylum and which can be read consecutively without reference to the optional chapters which treat each group more fully and present additional principles. There are chapters which deal with classification, symmetry, regeneration, invertebrate paleontology and a final one which summarizes the evolution of structure and physiology of the invertebrates. The book is profusely illustrated with diagrammatic drawings which are unusually clear and with photographs that are works of art.

A TEXTBOOK OF PHARMACOGNOSY by George Edward Trease, B. Pharm., Ph. C., A. I. C., F. L. S. Lecturer on Pharmacognosy in the University College of Nottingham. 1938. Third Edition. 739 pages. 233 illustrations. 10 maps. Bailliere, Tindall, and Cox, London. Price 21s.

The second edition of this excellent text was reviewed in the April 1938 number of this Journal. The third edition follows the same general plan, except the book is divided into five sections instead of three. One of the new sections is on microscopy and the other on the analysis of drugs. The book has been enlarged, additional illustrations and the latest knowledge added. It deserves a wide use.

AN INTRODUCTION TO HUMAN PHYSIOLOGY by Lathan A. Crandall, Jr., M. D., Ph. D., Associate Professor of Physiology and Pharmacology, Northwestern University Medical School. 1938. Second Edition Revised. 356 pages. 104 illustrations. W. B. Saunders Company. Price $2.00.

The original purpose of the book was to present the problems of physiology in such a way that they would be comprehensible to students of the college age and briefly enough so they will not be lost in a maze of details or controversial discussions. The new edition has brought the subject matter up to date and a glossary has been added. The book is not sufficiently detailed or comprehensive enough to satisfy the needs of the pharmacy student as a text.

MATERIA MEDICA, PHARMACOLOGY, THERAPEUTICS AND PRESCRIPTION WRITING by Walter Arthur Bastedo, Ph. M., Sc. D., F. A. C. P., Consulting Physician to St. Lukes Hospital, New York, St. Vincent's Hospital, and Staten Island Hospital; President United States Pharmacopoeial Convention 1930-1940 and member of the Revision Committee; Formerly Curator of New York Botanical Garden; Instructor in Pharmacology, Cornell University, Associate in Pharmacology and Therapeutics, and Assistant Clinical Professor of Medicine, Columbia University. 1938. Fourth Edition, Reset. 778 pages. 80 illustrations. W. B. Saunders Company. Price $6.50.

Another well known standard text which ranks with the best in the field. The revision gives the present status of the use of the latest new drugs, the hormones, the vitamins and what is more important, the toxic effect and pathological changes induced by many of the widely used recently introduced chemicals. The original idea of making the book for the practitioner rather than for the scientist has been continued to be the guide in the present revision.

BIOCHEMISTRY FOR MEDICAL, DENTAL AND COLLEGE STUDENTS by Benjamin Harrow, Ph. D., Chemistry Department, City College, College of New York. 1938. 383 pages. 52 illustrations. W. B. Saunders Company. Price $3.75.

A book written in a language simple and clear and fully covering the fields sufficient for the students indicated in the title. Worthy of special notice are the references at the end of each chapter which have been selected with the special purpose in mind of training the student in the experimental method of approach. In-so-far as has been possible, references have been selected in English publications because of the average undergraduate's difficulties with foreign languages. Biochemistry is becoming an increasingly important subject in the training of the pharmacy student. This book deserves consideration.

A TEXTBOOK OF BACTERIOLOGY by Thurman B. Rice, A. M., M. D., Professor of Bacteriology and Public Health at the Indiana University School of Medicine. Second Edition, Revised. 1938. 563 pages. 121 illustrations. W. B. Saunders Company. Price $5.00.

The author planned the first edition of the book out of his classroom teaching experience with the idea of the needs of the student in a one semester course of bacteriology. A bibliography was not included because the average student will have all he can assimilate without it. The book contains only those phases of the subject that have been established with certainty. The morphological and cultural description of the various organisms are held to the real essentials in plan with the general plan of the book of giving aid to the interpretation of disease rather than serving as a manual for the identification of bacteriological species. The second edition has brought the subject matter up to date including researches on sulphanilamide therapy and the use of tetanus toxoid.

CLINICAL DIAGNOSIS BY LABORATORY METHODS by James Campbell Todd, Ph. B., M. D., Late Professor of Clinical Pathology, University of Colorado, School of Medicine, and Arthur Hawley Sanford, A. M.,

M. D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation); Head of Section on Clinical Laboratories, Mayo Clinic. 1937. Eighth Edition, Thoroughly Revised. 792 pages. 370 illustrations, 29 in colors. W. B. Saunders Company. Price $6.00.

This has become a standard book through thirty years and eight editions. Its contents are well known to all kinds of laboratory workers. It has been thoroughly revised in keeping with the latest knowledge and practice while preserving the original form. Should be found in every clinical laboratory.

ADVENTURES IN RESPIRATION. MODES OF ASPHYXIATION AND METHODS OF RESUSCITATION by Yandell Henderson. 1938. 316 pages. Illustrated. The Williams and Wilkins Company. Price $3.00.

A scientific study of the phenomenon of respiration, the reading of which is as fascinating as a dramatic novel. No better words can be found to describe it than those of the publisher when he says "An outstanding physiologist tells a story of life and death. It is not fiction, nor is it history, except in the sense that the events of his story will repeat themselves as long as men live. It is the record of scientific findings of 'vital' importance—the adventurous evolution of the acapnia theory which finally wins its recognition by a maneuver as old as the Trojan horse. The facts of respiration upon which resuscitation from asphyxia is based are presented as a story of adventure the author experienced and enjoyed because he knew how to meet them." A complete bibliography of the papers and reports by the author and his associates upon which the book is based is given chapter by chapter. The book should be in every pharmacy library.

A TEXTBOOK OF GENERAL BACTERIOLOGY by Edwin O. Jordan, Ph. D., Late Andrew McLeish Distinguished Service Professor of Bacteriology in the University of Chicago, Reviewed by William Burrows, Ph. D., Assistant Professor of Bacteriology in the University of Chicago. Twelfth Edition, Revised. 1938. 808 pages. 197 illustrations. W. B. Saunders Company. Price $5.00.

This well known standard work needs no description here more than to say that certain chapters have been entirely rewritten, made necessary by recent advances in knowledge. The sections which have been most affected are those dealing with oxygen supply and respiration, filtration, isolation of bacteria, virus diseases, virus proteins, poliomyelitus, influenza virus, jungle fever, typhoid vaccines, and pathogenic bacteria.

BIOLOGY FOR PHARMACY STUDENTS AND OTHERS by S. Mangham, M. A. (Cantab.), Professor of Botany, University College, South Hampton and A. R. Hockley, B. Sc. (London), Lecturer in Zoology, University College, Southampton. 1938. 613 pages. 299 illustrations. William Wood and Company. Price $6.50.

Recently a number of books have been written by English authors intended to be used in preparing students for the Preliminary Scientific Examination of the Pharmaceutical Society of Great Britain. This book covers the biological needs. In the botany section the authors have borne in mind the needs of the students of pharmacy and have incor-

porated such explanations of descriptive terms as are met with in standard works on pharmacognosy and on flowering plants. The illustrations are unique in that they are not intended to provide a comprehensive set of detailed drawings such as would be found in a detailed laboratory work, but have been made largely by the authors to guide the student in his observations and not as a substitute for laboratory work. The zoology section of the book provides a relatively large number of illustrations covering animal structures and types and dwells upon the comparative features in animal and plant structure which will be of value to the student in future studies involving physiology and pharmacology. Colleges of pharmacy would do well to equip their libraries with these books by English authors in order that both faculty and students may have the benefit of a more cosmopolitan point of view.

A MANUAL OF PHARMACOLOGY AND ITS APPLICATIONS TO THERAPEUTICS AND TOXICOLOGY by Torald Sollmann, M. D., Professor of Pharmacology and Materia Medica in the School of Medicine of Western Reserve University, Cleveland. Fifth Edition, entirely reset. 1937. 1190 pages. W. B. Saunders Company. Price $7.50.

This book, written by a man who has for many years been eminent in research and teaching in this field, has been extensively revised and made to conform with the latest British and United States Pharmacopoeias. There is a concise summary of the most important actions of the drugs discussed. A special feature is a large amount of small print material dealing with experiments and details which are helpful in understanding laboratory work. A most useful review is given of the pharmacology of the autonomic nervous system. The appendix contains an excellent bibliography of 104 pages so one may quickly locate the original articles upon which statements in the text are based. It is a valuable text and source book of information for students and practicing pharmacists.

MARIHUANA, AMERICA'S NEW DRUG PROBLEM by Robert P. Walton, Professor of Pharmacology, School of Medicine, University of Mississippi with a Foreword by E. M. K. Geiling, Professor of Pharmacology, University of Chicago. 1938. 223 pages. 17 illustrations and photographs. The J. P. Lippincott Company. Price $3.00.

It is refreshing after the harum-scarum publicity given this subject in the lay press and the popular lecture platforms to have a book written on the subject by a scientist of note who has made a study of the problem. Never-the-less, as one reads of the vice as it exists in the United States, the question constantly arises in the Editor's mind—why we make such a fuss about the hemp plant and think so little of the greater menace—the menace of alcohol? This book should be read by all pharmacists before they go before our womens clubs to produce a case of feminine jitters. Where one good American youth is liable to become a prey to a marihuana cigarette, a thousand will feel the pangs of alcoholism.

Rufus A. Lyman.

INSTITUTIONS HOLDING MEMBERSHIP IN THE ASSOCIATION

(Continued from Inside Front Cover)

NEBRASKA

Creighton University, College of Pharmacy, Omaha; William A. Jarrett, Dean (1916).

University of Nebraska, College of Pharmacy, Lincoln; Rufus A. Lyman, Dean (1918).

NEW JERSEY

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark; Ernest Little, Dean (1923).

NORTH CAROLINA

University of North Carolina, School of Pharmacy, Chapel Hill; J. Grover Beard, Dean (1917).

NORTH DAKOTA

North Dakota Agricultural College, Division of Pharmacy, Fargo; William F. Sudro, Dean (1922).

OHIO

Ohio Northern University, College of Pharmacy, Ada; Rudolph H. Raabe, Dean (1925).

Ohio State University, College of Pharmacy, Columbus; Clair A. Dye, Dean (1900).

Western Reserve University, School of Pharmacy, Cleveland; Edward Spease, Dean (1902).

OKLAHOMA

University of Oklahoma, School of Pharmacy, Norman; David B. R. Johnson, Dean (1905).

OREGON

North Pacific College of Oregon, School of Pharmacy, Portland; Antone G. Mickelsen, Dean (1914).

Oregon State Agricultural College, School of Pharmacy, Corvallis; Adolph Ziaja, Dean (1915).

PENNSYLVANIA

Duquesne University, School of Pharmacy, Pittsburgh; Hugh C. Muldoon, Dean (1927).

Philadelphia College of Pharmacy and Science, Philadelphia; Ivor Griffith, Dean (1900).

Temple University, School of Pharmacy, Philadelphia; H. Evert Kendig, Dean (1928).

University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh; C. Leonard O'Connell, Dean (1908).

PHILIPPINES

University of the Philippines, College of Pharmacy, Manila; Mariano V. del Rosario, Dean (1917).

PUERTO RICO

University of Puerto Rico, College of Pharmacy, Rio Piedras; Lucas L. Velez, Dean (1926).

RHODE ISLAND

Rhode Island College of Pharmacy and Allied Sciences, Providence; W. Henry Rivard, Dean (1926).

SOUTH CAROLINA

University of South Carolina, School of Pharmacy, Columbia; Emory T. Motley, Dean (1928).

SOUTH DAKOTA

South Dakota State College, Division of Pharmacy, Brookings; Earl R. Serles, Dean (1906).

TENNESSEE

University of Tennessee, School of Pharmacy, Memphis; Robert L. Crowe, Dean (1914).

TEXAS

University of Texas, College of Pharmacy, Austin; William F. Gidley, Dean (1926).

VIRGINIA

Medical College of Virginia, School of Pharmacy, Richmond; Wortley F. Rudd, Dean (1906).

WASHINGTON

State College of Washington, School of Pharmacy, Pullman; P. H. Dirstine, Dean (1912).

University of Washington, College of Pharmacy, Seattle; Charles W. Johnson, Dean (1906).

WEST VIRGINIA

West Virginia University, College of Pharmacy, Morgantown; J. Lester Hayman, Director (1920).

WISCONSIN

University of Wisconsin, School of Pharmacy, Madison; Arthur H. Uhl, Director (1900).